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THE UNIVERSITY OF ALBERTA

Depression in Adolescents

by

Hau Lin Chow

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF Doctor of Philosophy

Department of Educational Psychology

EDMONTON, ALBERTA

Fall 1990

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Dedication

This dissertation is dedicated to my greatgrandfathers who travelled to the brave new world of Canada some 100 years ago in order to give a better life for those that would come after them. Without their vision, and the visions of their children and grandchildren, I would not have been given the opportunity to pursue my educational goals. For those who had passed on, especially my greatgrandmother, grandfather, and my two aunts, I regret that they are not able to witness, in person, this important milestone.

Abstract

Adolescents referred to an outpatient facility were used to investigate the phenomenon of depression. During a 14-month period, 265 subjects completed the psychometric testing. Missing data reduced the sample to 214. Information about DSM-III diagnosis, age, gender, and self-report data on depression (Children's Depression Inventory), self-esteem (Tennessee Self Concept Scale), and locus of control (Rotter's I-E Scale) were retrieved from files. Approximately 60% of cases were males. The mean age was 14.7 years. Affective disorders: major depressive disorders (*MDD*) and dysthymic disorders (*DYS*), predominated the sample (42.5%) while behavioral disorders: conduct disorders (*CD*) and oppositional disorders (*OPP*), represented the second largest group (24%). Attention deficit disorders (*ADD*) and V-codes (*VC*) represented the third largest group (11%). These groups, consisting of 78% of cases, formed the focus of the majority of analyses.

More than 40% of cases had multiple diagnoses. Detailed analyses showed that there were no differences (on the self-report measures used) between those with a primary versus those with secondary diagnoses, allowing for group assignment to be based on the primary diagnosis only. Although measures of depression and self-esteem typically show high correlations, a cross-scales factor analysis of individual scale items revealed virtually *no* crossovers.

The study found the rating scale designed for dealing with inter-rater reliability for multiple diagnoses has utility. The use of *z*-scores in profile analysis helped to reveal patterns and to quantify differences between groups. The *MDD* group had the most distinctive and most severe profile while the *DYS* had the least distinctive one. *CD* and *OPP* groups showed virtually identical profiles. Based on only the self-report measures, an overall accuracy rate of 64% was achieved for differentiating *MDD*, *CD+OPP*, and *VC* groups.

Univariate analyses revealed that females were more depressed, more external, and endorsed fewer positive self-concepts than males. The major diagnostic group differences were between the *MDD* and *CD* groups. The *MDD* showed more depressive symptomatology, lower self-esteem, and had the largest discrepancy between their ideal versus actual self-concepts.

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A list of Abbreviations

Psychiatric Classification Systems:

DSM-III	Diagnostic and Statistical Manual of Mental Disorders, third edition
DSM-III-R	Diagnostic and Statistical Manual of Mental Disorders, third edition, revised
ICD-9	International Classification of Diseases, ninth edition

Diagnostic Groups:

MDD	Major Depressive Disorder
DYS	Dysthymia Disorder
CD	Conduct Disorders
OPP	Oppositional Disorder
ADD	Attention Deficit Disorders
VC	V-codes

Self-Report Measures:

CDI	Children's Depression Inventory
TSCS	Tennessee Self Concept Scale
Ident Self	Identity Scale on the TSCS
Self Sat	Self Satisfaction Scale on the TSCS
Behav Self	Behavioral Scale on the TSCS
I-E	Rotter's Internal-External Locus of Control Scale
VIC	Victim score on the I-E, external pole of the self attribution perspective
PAG	Passive agent score on the I-E, external pole of the self attribution perspective
PO	Powerful other score on the I-E, external pole of the world attribution perspective
NC	Noncontrollable score on the I-E, external pole of the world attribution perspective
PVIC	proportion score of VIC items, out of both VIC and PAG items, using the self attribution perspective
PPAG	proportion score of PAG items, out of both PAG and VIC items, using the self attribution perspective
PPO	proportion score of PO items, out of both PO and NC items, using the world attribution perspective
PNC	proportion score of NC items, out of both NC and PO items, using the world attribution perspective

Process Variables:

TMDD	Length of current depressive episode in months for individuals in the MDD group
TTMDD	Lifetime total of depressive episode in months for individuals in the MDD group
TDYS	Length of current dysthymic episode in months for individuals in the DYS group
TTDYS	Lifetime total of dysthymic episode in months for individuals in the DYS group

Chapter 1 INTRODUCTION

Depression has been described in adults for thousands of years. There have been tremendous advances in the understanding of its etiology and treatment. The discussion of depression in children has been heated in the past 20 years; first concerning its existence, then its form. The current issues are its nature, course, causes, assessment, and treatment (Kazdin, 1990). Depression may vary markedly with age, however, advances in the study of childhood depression have resulted from "an initial assumptive leap that diagnostic criteria such as those invoked by the DSM (Diagnostic and Statistical Manual of Mental Disorders) or RDC (Research Diagnostic Criteria) can be applied among children, adolescents, and adults" (Kazdin, 1990, p. 122).

Although a great deal of research activity has been generated by using adult criteria for childhood depression, there is still debate about the validity of the diagnosis (Nurcombe, Seifer, Scioli, Tramontana, Grapentine, & Beauchesne, 1989). Nurcombe *et al.* were critical of the current enthusiasm for the diagnosis of depressive disorder in children and adolescent. Severely disturbed children tend to present with *many* symptoms, some of which *may* fit into the diagnostic criteria for depression. It is difficult to distinguish between spurious syndromes and true comorbidity. They were also concerned of the diagnostician's confirmatory bias that may subtly influence patients to own dubious symptoms or to overinterpret marginal symptoms. Working primarily with parental report of pathology (Child Behavior Checklist; Achenbach & Edelbrock, 1983), Nurcombe and his associates concluded that depression in (inpatient) adolescents can be most cogently explained by the combination of a categorical (ie, major depression) with a dimensional (ie, dysthymia) model. They were unable to find a clear depressive factor from the an outpatient sample.

The study of depression in childhood contributes to the understanding of depression in both childhood and adulthood. A follow-up study of depression in adolescent found evidence of continuity of depression into adulthood (Garber, Kriss, Koch, & Lindholm, 1988). Twenty inpatient psychiatric adolescents (mean age of 14) were followed up 8 years after discharged. Of the 11 diagnosed with major depression (using the RDC), 7 (64%) had at least one episode of major depressive disorder in the follow-up period while 4 (4/7 or 57%) had more than one episode. In contrast, only 1 (1/9 or 11%) from the nondepressed group had a depressive episode. The study not only provides evidence of *continuity* of the disorder, it emphasizes the importance of the identification of depression because of its long-term treatment implications.

Similarly, there is evidence for continuity of childhood depression. In a 5-year longitudinal study, Kovacs and associates tracked referrals to child (aged 8 to 13) psychiatric outpatient services (Kovacs, Feinberg, Crouse-Novak, Paulauskas, & Finkelstein, 1984; Kovacs, Feinberg, Crouse-Novak, Paulauskas, Pollock, & Finkelstein, 1984). Those diagnosed with a major depressive disorder or dysthymic disorder (using DSM-III diagnostic criteria) showed a high risk for a new bout of depressive illness. For the major depressed group, there is a 72% cumulative risk of a new episode within the five year period. Those diagnosed with dysthymia had a high risk of developing an episode of major depressive disorder in this time period (50% of patients had an episode within 3.5 years).

This study's focus is the phenomenon of depression in adolescents in an outpatient facility. The cognitive and emotional dimensions are specifically emphasized: self-esteem and locus of control. These are not only important constructs in the development of children and adolescents, they have a central role in the etiology and expression of depression. Although there is debate concerning the *causal* linkages between depression and low self-esteem (eg, Bohrnstedt & Fisher, 1986), low self-esteem has been recognized by clinicians (regardless of theoretical camp) as one of the cardinal signs of depression (eg, Beck, 1967; Mendelson, 1974). Similarly, locus of control has been implicated as one of the risk factors for depression (eg, Abramson, Seligman, & Tesdale, 1978; Lakey, 1988; Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984).

The use of adult-based classification systems and theories should not ***negate*** the potential impact of development on the expression of depression in children and adolescents. The study of psychopathology such as depression can benefit tremendously from knowledge accumulated from the study of normal development. There is some suggestion that there are *costs* to normal development in the form of increased risk for certain forms of psychopathology (Leahy, 1985). Without a clear understanding of normal development, one cannot understand *abnormal* development.

This study investigates the application of the DSM-III classification and Beck's cognitive theory of depression. An important issue addressed in the study is the discriminability of different diagnostic groups using self-report data of depressive symptomatology, self-esteem, and locus of control. Differential discriminability has implications for the validity of the diagnoses as well as for classification and treatment issues.

The study accords equal importance to the issue of suitability of the instruments used to measure the above three constructs. Often scales are chosen *not* based on their technical properties but based on considerations such as cost or length. Any information collected are only as reliable and valid as the instruments used to collect them. These psychometric or technical properties (of the instruments) are not static but are related to the *appropriateness* of the intended usages. The study will examine in detail measurement issues related to suitability of the DSM-III, the Children's Depression Inventory (*CDI*), the Tennessee Self Concept Scale (*TSCS*), and Rotter's Internal-External Locus of Control Scale (*I-E*) for an outpatient adolescent population.

Chapter II LITERATURE REVIEW

This literature review surveys research in four major areas: depression, self-concept and self-esteem, locus of control, and psychiatric diagnosis and classification. Within each area, particular emphasis is placed on the contributions from developmental research with the normal population. The review specific to the self-report instruments used is included in Chapter III.

Depression

Developmental Issues for Theories of Depression

The study of depression, like many other psychopathologies, has been focussed on adults. Theories, models, and treatments have all been developed for *adults*. The usual progression is to test the *applicability* of these for children and adolescents. This bootstrapping process is a valuable one: maximizing the knowledge gained from the adult arena for children. The potential drawback is the possibility of being too rigid in the application and failing to acknowledge how the *differences* in the cognitive, emotional, and social domains between children and adults affect the etiology, phenomenology and treatment of the disorders. This section presents some of these differences.

Continuity and Discontinuity: Impact for Psychopathology

Rutter (1986) observed that there is at least seven major mechanisms by which early experiences might be linked to later psychiatric disorders. They are summarized as follows:

> 1. They may lead to immediate disorder...which persists into adult life for reasons independent of the initial causation.
> 2. They may lead to bodily changes (such as changes in the neuroendocrine system) which in turn influence later functioning.
> 3. They may lead directly to altered patterns of behavior - taking the form of an overt disorder at a later point in time.
> 4. They may lead to changed family circumstances - which creates a predisposition to particular disorders.
> 5. They may operate through the altering of sensitivities to stress, creating vulnerabilities, or through the modification of coping styles, creating protective factors.
> 6. They may alter the individual's self-concept, attitudes, or cognitive set which in turn influence the individual's behavior.
> 7. They may have an impact on later behavior indirectly through the selection of environments - closing or opening opportunities.
>
> (Rutter, 1986, p. 6)

Rutter further stated that "it is evident that many mental illnesses arise for reasons that have little to do with happenings during childhood...A developmental perspective must take account of continuities *and* discontinuities between childhood and adult life." (p. 7). Even if adverse childhood experiences may result in poor psychosocial outcomes in early adulthood, a supportive relationship, such as a well-functioning spouse, can dramatically improve the individual's psychosocial functioning. Research in the linkages between childhood and adult disorders must keep these in mind.

On the developmental aspects of depression, Cicchetti (1984) stressed that one must integrate the current knowledge about the *continuity* and *regularity* of normal child development, such as Piaget's stages of cognitive development, with the possible forms of depressive psychopathology that can take throughout development. Developmental psychopathologist must pose the question as to *how* the orderly development (in childhood) may be expected to alter, affect, or limit the extension of adult theories of depression to children. For example, how does the age-appropriate *limitations* in children's cognitive, emotional, and social development may make the expressions of certain depressive symptoms beyond their repertoire. This is precisely one of the theoretical reasons put forward by psychoanalytic scholars about the existence of depression in children. Because psychoanalytic theory posits that depression requires a well-developed superego, depression is not possible until adolescence.

Behavioral Isomorphism

Investigations of depression can be classified by age into prepubertal (preschool and school), pubertal, and adult. Two approaches characterize these studies. One, certain disorders of infancy and childhood are compared to depressive disorders in adulthood. Two, the more common approach, is the investigation of the appropriateness of adult symptoms in children.

Commenting on the possibility of depression in infancy, Rutter (1986) raised the question about the proper placement of Spitz's description of anaclitic depression - whether it should be considered conceptually an *early* form of depression or as an *atypical* syndrome. He noted that the Spitz study had been criticized on methodological grounds and that there had been very few detailed clinical accounts of this disorder in subsequent years. He was equally skeptical of the phenomenon of protest-despair-detachment (as described first by Bowlby) seen with many toddlers when faced with *temporary* parental separation, such as when a child has to be hospitalized. This is most prevalent between the ages of 6 months and 4 years. Younger infants are less affected perhaps because they have not made enduring enough *selective* attachments; older children are less affected perhaps they have the cognitive skills to understand that the separation is temporary. The prevalence and its rapid recovery (upon reunion with the parents) both suggest that this phenomenon should not be included unless the child continues to have adverse affective reactions.

The crucial issues in the investigation of depression in older children concern the *form* of the disorder rather than its existence. The relationship between cognitive maturity and capacity for experiencing certain preconditions of depression will be presented in detail in the section on self-concept. On the issue of behavioral isomorphism, Cicchetti & Schneider-Rosen (1986) suggest that one should investigate similarities and differences in both molar and molecular symptomatology during different developmental periods. That is, a child whose depressive episode spans the transition between preoperational and concrete-operational thought may display a loss of self-esteem, excessive and inappropriate guilt and psychomotor retardation. However, the particular manifestation of these symptoms may change and develop as the child's cognitive, affective, and behavioral competencies change.

The Impact of Development on the Etiology of Depression

Cicchetti & Schneider-Rosen (1986) review the significance of three major areas in developmental research for the understanding of childhood depression: competence, self-understanding, and development of emotion.[1] The first two areas are presented below.

Competence and depression

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[1] Competence is also reviewed in the section on self-esteem.

The concept of competence is crucial to psychopathology because of the interrelationship between affect and social interactions. The concept has the potential to have an integrative role in theories of social, emotional, and cognitive development. Waters & Sroufe (1983) define competence as the ability to use both internal and external resources to obtain a satisfactory developmental adaptation. Internal resources refer to specific skills and broad characteristics of an individual. External resources refer to anything else, outside the child, that may help the child coordinate affect, cognition, and behavior.

Cicchetti & Schneider-Rosen (1986) identified four general developmental issues that a child must negotiate: attachment, autonomy, establishing peer relationship, and hierarchical integration of all three. Each of these issues is more *salient* at a particular period of development, but they assert that the issues are relevant at all ages. *Attachment* is most important for the first year of life. *Autonomy* is more characteristic for the 12-30 months period. *Peer relationship* is important for the period between 30 months and 7 years. *Hierarchical integration* is most crucial between 7 and 12 years.

The relationship between competence and depression can be addressed by one or more of the following questions:

> 1. Does a depressive symptomatology manifest itself at every developmental level in terms of a lack of competence?
> 2. Does depression result in a lack of competence within one domain (eg. affective), which then influences the other domains, or does depression result in a lack of integration of competencies across domains?
> 3. If so, in what manner does depression, as opposed to some other form of psychopathology, manifest itself as a lack of competence?
> 4. Does a depressive episode at one developmental level affect a child's ability to attain competence at later periods?
> 5. How might a genotype that predisposes for depression or biological abnormalities that constitute a diathesis for depression manifest themselves in terms of the resolution of stage-salient developmental tasks, especially in infancy and early childhood?
>
> (Cicchetti & Schneider-Rosen, 1986, p. 89)

Citing a lack of longitudinal, prospective study using broad-band measures to measure competence across different ages, Cicchetti & Schneider-Rosen propose several *preliminary* hypotheses regarding the etiological significance of certain incompetencies for depression. Using the classification of infant attachment by Ainsworth, Cicchetti & Schneider-Rosen suggest that Type A infants (avoidant) develops into an excessively dependent child that is vulnerable to depression. Type C infants (resistant) who are difficult to be comforted by the principal caregiver may be vulnerable to a wide range of psychopathology because of weakly developed support networks. The very development of an insecure attachment (Type A or C) through *noncontingency* of maternal caregiving (Ainsworth, Blehar, Waters, & Wall, 1978) may itself be related to development through the development of learned helplessness-like conditions that are conducive to depression.

Self-Understanding and Self-Esteem

A model of self-understanding was proposed by Damon & Hart (1982, 1988). They distinguish among the following terms. ***Self-understanding*** is a cognitive skill or ability; it is a person's representation of the self. A ***self-cognition*** is a particular use of this skill. ***Self-schemata*** are formed after ***repeated*** and ***intense*** self-cognitions that share a similar meaning or affective quality have been used. Self-esteem is an affect, either positive or negative, about the self. Cicchetti & Schneider-Rosen suggest the following relationship between self-cognition and self-esteem: certain self-cognitions cause specific feelings of self-esteem to arise and that the polarity of these feelings is dependent on the content of the cognitions. For example, a self-cognition such as: "I am a good student" is likely to be associated with a positive feeling while "I am not liked by my friends" is likely associated with a negative feeling.

Cicchetti & Schneider-Rosen suggest that although there is increasing differentiation of the various components of the self with age, during periods of stress, there is a possibility of regression to an earlier level of functioning. When an individual is under stress, that may increase the salience of less mature features of self-understanding or prevent the integrated functions such that negative affect prevail. By combining Damon & Hart's model and the reformulated learned helplessness model of depression (Abramson, Seligman, & Teasdale, 1978), Cicchetti & Schneider-Rosen propose a model that identify specific vulnerabilities during a child's cognitive development.

Assuming that development of self-cognitions generally proceeds from the physical to the psychological, they propose that this progression is ***susceptible*** to the development of the depressive attributional style of stable, personal, and global attributes. They argue that physical characteristics are perceived as *unstable* (one grows taller), *universal* (everyone grows), and *specific* (limited to one sphere) while psychological characteristics are more likely to be *stable* (I am dishonest), *personal* (I am the only one), and *global* (I have always been this way). Similarly, the progression from absolute to comparative self-evaluation and from action-based to competency-based self-cognitions leads to stable, personal, and global attributions. Cicchetti & Schneider-Rosen observed that at about 7 or 8 years of age, children develop the *ability* to make personal, stable, and global attributions about the self. Before this age, children may have negative moods but they tend to be *unstable* and very *content specific*. It is only about age 8 that children can experience a loss of self-esteem and depressed affect associated with personal comparisons based on stable, global characteristics resulting in a *negative* evaluations of the self.

Classification Issues in Childhood Depression

In their review of the classification of depression in children, Carlson & Garber (1986) noted that the controversy surrounding this topic can be traced chronologically to five major schools of thought. The controversy surrounds the existence, definition, and description of the symptomatology of depression in children. All of the schools of thought use as the *starting* point the phenomenology of depressive disorder in adults.

The first school of thought was based on psychoanalytic theorists who hypothesized that depressive disorders could not occur in prepubertal children because they lack a fully developed superego; there is no well articulated self-punitive behaviors (Rie, 1966). There are many variants to the etiology of depression in adults based on psychoanalytic theory (Mendelson, 1974). The central theme involves some type of conflict between the ego and the superego. The ability to experience guilt and anger is crucial for the development of depression. This is hypothesized not to be possible until the child reaches adolescence. Thus, depression, as seen in adults, is likely to be extremely rare in children.

The second school of thought proposes the concept of 'masked depression'. The proponents assert that children can experience depression but they do not manifest the typical symptoms of depression as seen in adults. Rather, the *underlying* depression is 'masked' by or expressed as other behaviors and disorders. Glaser (1967) hypothesized that the following symptoms as signs of 'masked depression': failure to thrive (in infant and small children), delinquency, school phobia, learning difficulties, and psychophysiologic (or psychosomatic) reactions. Others (Toolan, 1962, Chwast, 1967, Spiegel, 1967) concurred with similar lists.[2] The criticisms of masked depression center around the wide range of behaviors that was hypothesized as behavioral equivalents of depression and the unclear linkages between these behaviors and depression. As an example of the lack of utility of the masking behaviors, a retrospective analysis of 10,412 clinical files of hospitalized children and adolescents (between 1957 and 1977) found that masked symptoms (presenting problems of aggression, uncontrollable bahavior, or misbehavior in the school or home) were not predictive of discharged diagnosis of depression (Christ, Adler, Isacoff, & Gershansky, 1981). By the beginning of the 1980s, the concept of 'masked depression' was abandoned (Cytryn, McKnew, & Bunney, 1980).

The third school of thought assumes that depression in children exists in a form similar to adult depression. It encompasses core symptoms such as sadness, anhedonia, low self-esteem, and other vegetative signs plus other characteristics that are unique to children. Essential versus associated features are used to conceptualize the differences. Essential features are those that are common to all depression regardless of age while associated features are those that are age-specific. Some of the behavioral equivalents identified by the proponents of masked depression can actually be considered as associated features.

The fourth school of thought adopts the position that depression in children is the same as that in adults, more for the pragmatic purpose of providing some standardization to the process of classification and research. The DSM-III criteria has been forwarded as the one to be used for classifying depression for all ages. Since the diagnostic criteria presents some age-specific features, it actually incorporates both the third and fourth schools of thought.

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[2] Although the concept of 'masked depression' has been used most often with children, it has been applied to adults as well (Lesse, 1979, 1983).

The last school of thought originates from developmental psychopathologists. The proponents assert that it is unrealistic, from a developmental perspective, to expect that the *same* signs and symptoms of depression apply for all ages. Limitations and differences in the child's linguistic, cognitive, social, and emotional development should produce *differences* in the interpretation, experience, and expression of depressive symptomatology over time. This position is similar to the third school of thought of essential and associated features. The proponents also suggest that classification should go beyond the simple categorization of symptoms and behaviors but should consider patterns of adaptation and competence.

These different schools of thought have direct consequences on the approach that a researcher will use to investigate depression in children. Regardless of the theoretical position taken, once a researcher undertakes an investigation, he/she will have to deal with the issue of classification. One of the major criticisms of classification is the potential harmful effects of labeling: of a self-fulfilling cycle where the problem behaviors are inadvertently reinforced and maintained. This is more troublesome when it is a child that has been given a label. It is important to keep in mind that the object of the classification process is to classify a child's *behavior* at a particular point in time. Therefore when child's behaviors change - the diagnostic label may no longer be appropriate. When that does *not* occur, it is not the *inherent* fault of the classification system or process but an unfortunate and inappropriate consequence.

Child-Centered Classifications

These classifications assume that depression in childhood is different from that in the adult and therefore adult criteria are not appropriate. Although there have been many studies about the phenomenology of depression in children, there has been very few actual *specification* of a classification system. Two are described below: one from the third (masked depression) and one from the fourth (unique features) schools of thought.

Cytryn & McKnew (1972) proposed a classification system for depression in children: masked depressive reaction, acute depressive reaction, and chronic depressive reaction. Specifically about masked depression, the overt behavioral signs include a variety of emotional disorders such as hyperactivity, aggressive behavior, psychosomatic illness, hypochondriasis, and delinquency. The depression is inferred "from periodic displays of a purely depressive picture and from depressive themes on projective tests such as the Rorschach, Thematic Apperception Test, figure drawings, and fantasy material." (p. 152). As can be seen, the criteria generated by the 'masked depression' concept were quite broad. Cytryn, McKnew & Bunny (1980) compared their classification with the DSM-III criteria and found that 71% of children diagnosed with 'masked depression' could be classified as having another disorder according to the DSM-III system.

Weinberg and his associates (Weinberg, Rutman, Sullivan, & Dietz, 1973; Ling, Oftedal, & Weinberg, 1970) developed a set of criteria specifically for children. The 'Weinberg criteria' required the presence of dysphoric mood and self-deprecatory ideation plus *two* of the following symptoms: aggressive behavior, sleep disturbance, change in attitude toward school, change in school performance, diminished socialization, somatic complaints, loss of usual energy, and unusual changes in appetite or weight. When the Weinberg criteria was compared to the DSM-III (for depression), it was shown to be quite broad. Those who fit the Weinberg also meet the diagnostic criteria for other DSM-III disorders besides depression (Carlson & Cantwell, 1982; Cytryn, McKnew, Bartko, Lamour, & Hamovitt, 1982).

Adult Typologies in Children

The two major classification for depression are the International Classification of Diseases (ICD; World Health Organization, 1978) and the DSM-III. The comparison of the ICD and the DSM-III for childhood psychopathology is presented in the section on psychiatric diagnosis and classification.[3]

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[3] The Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978) is one of the precursors of the DSM-III and will not be presented separately.

Biologically-Based Classification

Studies in adult depression have pointed to the utility of biochemical indicators of depression for classification (Fawcett & Kravitz, 1985). The dexamethasone suppression test (DST) is among one of the most often nominated biological indicator or marker of depression (Carroll, Curtis, & Mendels, 1976a, 1976b). The DST measures the functioning of the hypothalamopituitary-adrenal (HPA) activity. Affective disturbances have been associated with diseases of the adrenal gland. Adrenocortical activity is regulated through the hypothalamus (and the pituitary gland). Neuroendocrine studies have found that some depressed individuals have defective HPA regulatory mechanisms such as excessive cortisol secretion and abnormal nocturnal release of cortisol.

The DST consists of a series of measurement of cortisol secretion after loading with dexamethasone, a synthetic cortisone. In normal subjects, a dose of dexamethasone (at midnight) will suppress cortisol secretion for at least 24 to 28 hours. Subjects who have endogenous depression show either a complete nonsuppression (no effect on cortisol secretion) or an early escape from this suppression (Carroll *et al.*, 1976b). Subjects suffering from non-endogenous depression tend to have normal pattern. Using the RDC criteria for endogenous depression, the DST showed a sensitivity (depressed subjects having abnormal results) of 67% and a specificity (normal results for nondepressed subjects) of 96% (Carroll *et al.*, 1981). The DST seems to be a state-related marker in that it has been shown to be sensitive to recovery from depression. DST normalization occurs at the same time as recovery from depressive symptomatology and that failure to normalize is associated with poorer clinical outcome (Greden, Gardner, King, Grunhaus, Carroll, & Kronfol, 1983).

Using the RDC to classify major depression in children, the DST has a sensitivity of 63% and a specificity of 90% in a sample of 18 prepubertal children (Poznanski, Carroll, Banegas, Cook, & Grossman, 1982). In a discussion of the role of the DST for identification in children and adolescents, the DST was found to have a sensitivity of 40% and a specificity of 92%, based on RDC diagnosis of 33 admissions to a psychiatric hospital (Klee & Garfinkel, 1984). For the same sample, the use of a cutoff score of 17 on the CDI resulted in a sensitivity rate of 65% and a specificity rate of 82%. Based on analysis of the MMPI profiles of depressed suppressor versus nonsuppressors, Klee & Garfinkel noted that the MMPI profile (peaks at scales 2 and 4) of the suppressor group was suggestive of more psychopathology than just an affective disorder profile. The MMPI profile of depressed nonsuppressors had only one peak (scale 2) indicative of affective disturbances. Using the DSM-III, rates of DST non-suppression were significantly elevated in children with major depressive disorder (8/10) or bipolar disorder (2/2) (Woodside, Brownstone, & Fisman, 1987). The sensitivity rate was 83% while the specificity was 68%. In a review of 13 studies of DST in children and adolescents (total sample of 620), 236 were diagnosed with major depressive disorder (Casat, Arana, & Powell, 1989). The DST sensitivity was 69.6% for children and 47.1% for adolescents; the specificity rates were 69.7% and 80.2% for children and adolescent subjects. These rates are comparable with results from the adult literature.

Learned Helplessness Model of Depression

Original Model: Trauma of Uncontrollability

The original model of learned helplessness (LH) of depression, based on animal studies, was proposed by Seligman (1975). Learned helplessness was first documented in animals by Overmier & Seligman (1967), and Seligman & Maier (1967). These researchers observed that animals presented with a series of unescapable shock will display "helpless" behavior. The behavior has three components or deficits: ***motivational*** (failure to initiate escape behavior), ***cognitive*** (failure to learn the response to terminate shocks), and ***emotional*** (sitting and enduring the shocks without whimpering). Seligman theorized that it is the experience of ***uncontrollability*** that was the crucial element for the development of learned helplessness. It is the expectation of ***future noncontingency*** that results in the symptoms of helplessness. He presented four lines of evidence that support his hypothesis that LH resembles human depression: symptoms, cause, cure, and prevention (Seligman, 1975).

The original model was criticized on several grounds including its simplistic cognitive explanations for what is viewed as a complex phenomenon. One, the theory does not address the role of individual differences in response to event uncontrollability. Two, the theory does not deal with the generalizability of helplessness behaviors across situations and over time.

Three, the theory has no account for the frequent loss of self-esteem among depressed individuals.

Reformulation: Role of Causal Attribution

The LH model was reformulated to incoporate the role of causal attributions (Abramson *et al.*, 1978). The model propose that when an individual is faced with noncontingency (ie, uncontrollable outcome), he/her will make causal attributions. There are three major *orthogonal* dimensions of causal attribution: globality (versus specificity), stability (versus instability), and internality (versus externality; sometimes referred to as personal versus impersonal). *Globality* influences the pervasiveness of helplessness deficits; *stability* influences the chronicity of the deficits; and *internality* influences the level of self-esteem of the affected individual. The reformulation predicts that there is a *differential* explanatory style depending on whether the event is a success or failure. The explanatory style that is most likely to result in depression is causal attributions of a failure to stable, global, and internal characteristics. An instrument has been developed to specifically to measure causal attributions: the Attributional Style Questionnaire (ASQ, Peterson, Semmel, vonBaeyer, Abramson, Metalsky, & Seligman, 1982).

The reformulation is viewed as a *diathesis-stress* model of depression. Depression results from characteristics of an individual (via his/her depressive attributional style) in conjunction with the characteristics of the situation (ie, uncontrollable bad events). It is the *co-occurrence* of both circumstances that can lead to a depressive episode.

Although the reformulation goes a long way to address some of the shortcomings of the original model, the increased emphasis on the individual's cognitions and the difficulties inherent in measuring cognitions, the model has become less verifiable or falsifiable (Huesmann, 1978).

Learned Helplessness in Children: Similarities to Adults

In their review of the extension of the LH model in children, Seligman & Peterson (1986) observed that the research has been guided by four general questions. *One*, are the linkages between depressive symptoms and cognitions the same for children as they are for adults? *Two*, are the depressive symptoms in children associated with the same type of attributional styles as they are in adults? *Three*, is this style predictive of depression as it is in adults? *Four*, what are the origins of a child's attributional style?

Three studies were reported by Seligman & Peterson (1986). The first involved 40 school children aged 9 to 11. The children were assessed with the *CDI*, and given a series of Block Design (from the Wechsler Intelligence Scale for Children - Revised) and anagram trials. High scores on the *CDI* were correlated with a long latency to task completion of both Block Design and anagrams. When the children were divided into three groups based in their *CDI* scores, the highest group performed more poorly on the anagram task than the lowest group. Since these types of tasks are also performed poorly with depressed adults, the researchers concluded depressed children also show the *same* type of cognitive deficits.

Study Two was a 6-month longitudinal study involving 96 children aged 9 to 13 years. The children completed both the *CDI* and the Children's Attributional Style Questionnaire (*CASQ*) at the two testing occasions.[4] For both testing occasions, *CDI* scores were correlated with *CASQ* scores in the expected direction: negatively with good events and positively with bad events. As well, the *CASQ* composite score for bad events at Time 1 showed a modest correlation ($r=.27$) with *CDI* scores at Time 2 when depression at Time 1 was controlled for. This relationship was not found for the composite score for good events ($r=-.10$).

Study Three involved a subset of the children and their parents from Study Two (Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). The parents of 47 children filled out the *BDI* and the *ASQ*. The mother's *ASQ* for bad events correlated positively with her child's *CASQ* score for bad events ($r=.39$) and her child's *CDI* score ($r=.42$) while the mother's *BDI* score correlated positively with her child's *CDI* score ($r=.37$) and (weakly) with the *CASQ* score for bad events ($r=.27$). The results from the father's questionnaires were correlated *neither* with his child's or his spouse's responses.

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[4] The *CASQ* is the children's version of the *ASQ* yielding separate subscores (as well as a composite score) for internality, stability, and globality for good and bad events. Unlike the adult form where individuals were presented with situations and they respond on a likert-type scale, the children's version uses a forced-choice format for each of the domains.

Seligman *et al.* interpreted the mother-child correlations as reflecting a vicious circle whereby the child may *learn* a depressive attributional style from the mother and that the depression of both parent and child would tend to *maintain* each other. The lack of correlations with father's responses may indicate a lack of involvement of the father in the family and the possibility of greater social support of the father from peers - thus averting depression.

A similar set of results was found in another longitudinal study (Nolen-Hoeksema, Girgus, & Seligman, 1986). A sample of 168 children ranging in age from 8 to 11 years was followed for 12 months. There were five testing periods (January, March, June, October, and January). Maladaptive explanatory style (attributions of negative events to internal, stable, and global characteristics as measured by the *CASQ*) from one testing period (*n*) was predictive of depression score (*CDI*) from a subsequent testing period (*n+1*) even with depression scores from both time period *n* and *n-1* partialled out.

The general finding of the relationship between a child's attributional style and level of depression was supported in a recent study (Bodiford, Eisendtadt, Johnson, & Bradlyn, 1988). The study involved 75 children from grades 3 to 5. The following measures were used: *CDI* (depression), the Intellectual Achievement Responsibility Scale (*IAR*; locus of control), *CASQ* (attributional style; used a depression attributional score which is the difference between the composite scores for good and bad events), the Child Behavior Checklist (*CBCL*; parent rating of child's behaviors), Wechsler Intelligence Scale for Children - Revised (2 subtests; estimate of intellectual ability), and a behavioral manipulation designed to generate helplessness condition (block designs with predetermined rates of success and failure). Using a two-group multivariate analysis of variance (MANOVA), the high *CDI* score group (*mean* = 15.8) was significantly different from the low *CDI* group (*mean* = 3.35) on the following measures: the *CDI* (high group higher), the depression attributional score (high group more depressed pattern); the Depression, Internalization, and Externalization scales on the *CBCL* (high group higher on all three).

A second analysis was performed using a more stringent grouping criteria: using both CDI and CBCL depression scores (high group = high on both; low group = low on both). The results of the MANOVA were the same. The score from the helplessness task did not differentiate the two groups in either analyses. The researchers suggested that perhaps the helplessness task was too transparent in that the children may have realized it was impossible to solve and therefore would have been *less* likely to attribute the 'failure' to internal, stable, and global causes. They also speculated that perhaps the use of a clinically depressed group may have brought out the differences more clearly.

In a critique of the current trend of studies involving the reformulated model of LH and depression, Brown & Siegel (1988) noted that the emphasis has been shifted to considerations of attributions for *bad* versus *good* events rather than considerations of the *controllability* of the event - which was the hypothesized determinant of the depressive attributions. In a 8-month (school term) longitudinal study, 364 adolescent females in grades 7 through 11 were asked to complete the following: a measure of life stress, a attributional probe for each life stressor (measuring control, locus, stability, and globality), and the Center for Epidemiologic Studies Depression Scale (CES-D). Only those who reported at least one negative life event was contacted at Time 2 of the study (final sample of 176 females).

Using a series of hierarchical regression analyses, the researchers found that controllability attributions *moderated* the effects of the other causal judgments on depression. For events attributed to *uncontrollable* causes, the attributions were as predicted by the reformulated model. However, for *controllable* events, internal and global attributions were associated with a *decrease* in depression (stability attributions had no relationship to depression scores). The researchers interpreted the *positive* effect of controllability on mood (less depressed) as a means of coping: the impact of a negative event is *decreased* when one perceived that there is a measure of *control* over the occurrence of that event. Attributions of internality and globality reflect that element of control. This is similar to the findings with victims of violent crimes whereby they attribute the cause to some *personal* characteristics - which presumably can be changed in order to prevent future attacks (Janoff-Bulman, 1979, 1982).

Beck's Cognitive Model of Depression

Symptomatology of Depression: Centrality of Cognition

Beck divides the symptoms into five major categories: emotional, cognitive, motivational, vegetative and physical, and psychotic manifestations (Beck, 1967). Some of the prominent features of emotional disturbance are dejected mood and negative feelings towards self. Motivational features are paralysis of will, suicidal thoughts, increased dependency. Some of the vegetative and physical features are loss of appetite, disturbance in sleep and fatigability. Finally, there can be psychotic features such as delusional guilt, nihilistic delusions. The most central symptomatology in Beck's model is the *cognitive* involvement. Although the most noticeable symptoms of a depressive episode are those in the affective or feeling domain, Beck hypothesizes that it is cognitive domain that is responsible for the initiation of a depressive episode, its maintenance, and ultimately its termination. One of Beck's central tenets is that *cognitions* are responsible for feeling states and thus changes in cognitive domain are necessary to effect changes in the affective domain.

Cognitive Components: Negative Triad, Schemas, Errors

The cognitive model for depression consists of three major components: cognitive triad, cognitive schemas, and cognitive errors. The central cognitive feature of a depressive episode is a set of three negative cognitions concerning the self and the world. The cognitive *triad* refers to a depressed person's negative view of the *self*, the person's negative interpretation of *ongoing experiences*, and the person's negative views of the *future*. This triad serves to maintain the person's depressive feeling state.

Other cognitive manifestations are low self-evaluation, negative expectations, and self-blame. "Low self-esteem is a characteristic feature of depression." (Beck, 1967, p. 22). There is a sense of deficiency in important areas such as ability, performance, intelligence, health, strength, popularity, etc. In the most severe cases, the individual views himself as worthless, completely inept, and a total failure. Negative expectation or negative outlook is related to the pessimism about the future and sense of hopelessness. The sense of permanence and irreversibility about the current depressed state makes the individual a high suicide risk.

Beck suggested that the self-blame and self-criticism are related to the individual's egocentric notions of causality. That is, the individual is *personally* responsible for events/happenings that are in no way connected to him/her. This is coupled with self-reproach for not being able to correct the situation because of the person's sense of self inadequacy. In severe cases, the individuals make statements such as: "I'm responsible for the violence and suffering in the world. There's no way in which I can be punished enough..." (p. 24).

A schema is a relative enduring cognitive structure used to *organize* experiences. Incoming stimuli are continually interpreted by a person based on his or her previous experiences. Schemas refers to these relatively permanent or stable perceptual *screens* that are activated and used to interpret everyday experiences. They function as screens, differentiating, coding and evaluating incoming stimuli. Some of the properties of schemas are their flexibility, openness, permeability and concreteness. The most important characteristic of schemas is the *content*. They relate to the individual's attitudes, goals, values and conceptions. Beck noted that "the idiosyncratic schemas in depression consist of negative conceptions of the individual's (self) worth, personal characteristics, performance or health, and of nihilistic expectations." (Beck, 1976, p. 290).

The specific depressive constellation of schemas is composed of a network of *interrelated* negative attitudes which means activation of one would tend to activate other related ones. The relationship of schema and depression is the existence of these *prepotent dysfunctional* schemas that are *activated* at times of stress. For example, an individual fails an examination, that stressor may activate the prepotent schema that "I am stupid". Depending on the person's other related schemas, this event may signal the beginning of a self perpetual *cycle* of increasing feelings of inadequacy and dejection. Beck theorizes that as the depressive cycle deepens, the individual experiences a *constriction* of his/her cognitive field. The negative schemas gain potency and increasingly *replace* other more appropriate schemas thereby *decreasing* the person's objectivity and ability to do reality testing. The activation of these schemas lead to the typical feelings of sadness, guilt, loneliness, and pessimism.

Beck observed that depressed individuals often show distortions in their reasoning and inference skills. Cognitive errors refer to the distortions and misinterpretations that occurs with someone who is suspectable to depressive episodes. Cognitive *errors* in thinking are usually habitual response sets that prevent the depressed individuals from *objectively* evaluating their ongoing experiences. Beck and his associates (Beck, Rush, Shaw, & Emery, 1979) identified seven cognitive errors: 1) overgeneralization; 2) selective abstraction; 3) assuming excessive responsibility or personal causality; 4) presuming temporal causality or predicting without sufficient evidence; 5) making self-references; 6) catastrophizing; and 7) thinking dichotomously.

The effect of these errors is to *maintain* the depressed individuals' belief that nothing will and can change; perpetuating the *pessimistic* views of the future. This in turn maintain the person's depressive affective state. Thus, small setbacks are interpreted as lasting forever and successes are minimized. Cognitive therapy attempts to identify these errors and through concerted reality testing and reattribution techniques to change these perceptions.

Relationship between Schemas and Self-Esteem

According to Beck, schemas can be viewed as concepts of self that are relatively stable and permanent. Beck hypothesized that individuals associate certain affects with schemas. Schemas that are negative in content (such as "I am too fat") usually have negative affect associated with them. However, that is not always the case. The affect can be neutral, dependent on the individual. In order for negative self-concepts to be pathogenic (for depression), they must be associated with a negative value judgement. Beck is not very explicit about the process of how affects are associated with schemas. Beck does state that the direction of a person's self-esteem is dependent on the balance between the number of positive and negative self concepts. That is, a person with more positive self-concepts will have a healthy self-esteem and one that has more negative self-concepts will have a low self-esteem.

However, Beck did not specify the impact of the *relative* importance of certain concepts of self on the overall level of self-esteem. That is, do changes in the more central or key self-concepts have a greater impact on the person's overall level of self-esteem? More importantly, Beck did not specify how one can increase self-esteem for those who has many prepotent negative schemas. For example, is it possible to change the negative affect that are associated with some of the concepts of self?

Another way of looking at the relationship between self-concept and self-esteem is to focus on their differences. Self-esteem differs from self-concept in its evaluative component. The content of concepts of the self are neutral, positive or negative. It is the *evaluative* component that is applied that determines the affect that is associated with these concepts. In order to evaluate any concepts there must exist within the person a set of super-ordinate concepts or ideals by which concepts are compared. It is the mismatch of concepts of self and the ideals that results in a low self-esteem.

Consider the following example: a mark of 80 in Physical Education exam. The reaction could range from utter dejection to utter delight. For the individual who has an ideal that he should always get 90s in all his courses, he would feel dejected. On the other hand, for an individual has an ideal that he should get 90s in all his required courses, but that performance in elective courses are irrelevant, the mark of 80 in his elective course would probably not be disastrous. Finally, for an individual who has always considered himself physically awkward, the mark of 80 would be received very well.

Ideals or standards are established early in a child's development. Expectations and standards of behavior from caretakers, peers, school, society are eventually incorporated by the developing child and form the basis for these super-ordinate self ideals/standards. The evaluative component can almost be automatic. Although caretakers try hard to evaluate *behaviors* rather than the child per se, for some children, this distinction is not easy to make. Each time a child encounters a negative judgement from others (eg, you didn't know how to play softball), this tends to reinforce a negative concept or self-image (eg, I am a clumsy kid). A cycle is established: each negative judgement reinforces the negative self-image which in turn facilitates a negative interpretation of subsequent experiences, further consolidating the negative self-concept.

These ideals/standards would seem to be one of the crucial determinants for the development of depression.[5] That is, for those individuals that have very high standards, these would be most suspectable to episodes of depression because there are more chances of *not* meeting these than someone who has less lofty ideals. As well, the kind of ideals/standards also determine the individual's reactions to different life situations as evident from the previous example. The amount of difference between the ideal and the person's current life situation should be related to level of self-esteem. That is, when the difference is large and negative, with the current much lower than the ideal, the level of self-esteem should be low. So, one can deduce that a low self-esteem is associated a large mismatch between the current situation and a set of very high ideals.

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[5] This is developed in more details in the section on self-esteem.

Applications of Beck's Theory for Children and Adolescents

Although Beck's theory and the cognitive therapy that is based on the theory has been applied with success in adults, relatively little work has been done in children with the notable exception of the *CDI*. The more theoretical aspects of cognitive bias was recently examined. A scale was developed to measure cognitive bias: Cognitive Bias Questionnaire for Children (*CBQC*) which was based on the Cognitive Bias Questionnaire (*CBQ*; Krantz & Hammen, 1979). The *CBQC* consists of 10 brief vignettes which the child is to choose an option that belong to one of the following categories: depressed-distorted, depressed-nondistorted, nondepressed-distorted, and nondepressed-nondistorted. The *CBQC* was given to a group of 39 (mean age of 12.8 years) recent admission to child psychiatric units (Haley, Fine, Marriage, Moretti, & Freeman, 1985). The *CBQC* depressed-distorted scale was significantly correlated with self-reported measures of depression (*CDI* and *CDS*). Those diagnosed with major depression had a higher depressed-distorted score than any other diagnostic groups.

Leitenberg, Yost, & Carroll-Wilson reported data on a scale for measuring negative cognitive errors in children (1986). The Children's Negative Cognitive Error Questionnaire (*CNCEQ*) is a 24-item 5-point likert scale. It measures four different types of cognitive errors (catastrophizing, overgeneralization, personalizing, and selective abstraction) in each of three areas (social, academic, and athletic). The scale has been normed on a sample of 637 grades 4, 6, and 8 students. There were significant differences in the expected direction on the *CNCEQ* between high versus low depressed groups; between high versus low self-esteem groups; and between high versus low anxious groups. Depressed, or low self-esteem, or high evaluation anxiety children endorsed more cognitive errors than their counterparts.

The symptom of hopelessness is a central feature in depressed adults. Although inventories measuring depression generally have items assessing hopelessness, Beck and his associates have developed a specific scale for measuring this concept (Beck, Weissman, Lester, & Trexler, 1974). A self-report inventory for children has also been developed: the Hopelessness Scale for Children (Kazdin, French, Unis, Esveldt-Dawson, & Sherick, 1983). The utility of the scale was tested in a large sample of 262 children from an inpatient psychiatric facility (Kazdin, Rodgers, & Colbus, 1986). The two most common DSM-III diagnoses were conduct disorders (n=115) and major depression (n=42). When the group was divided into high (higher than 67th percentile; n=95) and low (below 33rd percentile; n=80) hopelessness, the high group was significantly more depressed, lower in self-esteem, and lower in self-reported social behaviors, and were rated by their parents as participating less in social activities and having poorer school performance. However, the Hopelessness Scale was not correlated with a measure of general psychopathology (Child Behavior Checklist; *CBCL* Total Score) or with DSM-III diagnosis.

Depression: Conclusions and Implications

The study of depression has primarily dealt with the pathology in adults. The application of the knowledge gained and the tools developed to children and adolescents had to wrestle not only with theoretical positions denying the existence in earlier years but with the more fundamental issue of continuity and discontinuity of psychopathologies in general. This study proposes to use both an adult classification (DSM-III) and theory (Beck's model) to identify and to discuss the phenomenon of depression in adolescents. From an etiological perspective, one can argue for the use of adult methodologies for an adolescent population. The validity of this can only be determined if one has a definitive test for depression that is *independent* of these measures. However, the study can still provide valuable information about individuals identified as depressed. To the extent that they show *similar* characteristics to their adult counterparts, one can be more confident about the validity of the application.

The interpretation for *dissimilar* characteristics is more difficult; one is not certain that they are caused by real age differences or that it is caused by an inappropriate application of adult methodologies to adolescents.

Self-Esteem

A review of research in this area must include research under the topic "self-concept". There is considerable overlap in the use of these two terms in the literature. Although not mutually exclusive, developmental studies are typically discussed using the term: self-concept. Studies with older children and adults use the term: self-esteem. Others use these two terms interchangeably. For this review, it is useful to distinguish these two terms. Self-concepts refer to those concepts of self that are formed in early childhood and also to concepts held in adulthood. Self-esteem refers to the affective and evaluative components of concepts of self. It refers to the individual's subjective feelings about one's self-worth or self-acceptance.

When the term, self-concept, is used in research with adults, it is most often conceptualized as some form of self-referent construct, such as self-actualization, self-consistency. Wylie (1979) in her review of self-concept construct, considers that the more restrictive construct of self-esteem to have fared better because it is more operationally manageable, and empirically fruitful.

Several different models about self-concept and their development are presented in this section. Although all the models investigated the development of the self in the normal child, all have made applications to or implications for the clinical population. In fact, one of the models assert that some types of psychopathology are the *result* of development (Leahy, 1985).

Self-Discrepancy Theory: Affective Consequences of Mismatches

Higgins, in a series of articles, has articulated a theory of the self that focuses specifically on discrepancies among different domains of the self (Higgins, 1987; Higgins, 1989a; Higgins, Klein, & Strauman, 1985). The model consists of domains of the self (3) and standpoints (2). The three domains of the self are: actual, ideal, and ought.[6] The two standpoints are: own and significant other. The theory has two basic postulates (Higgins *et al.* 1985). The first is that each person has different self-concepts associated with the different domains: 1. the *actual* self is the person's representation of the attributes that self or other believes the person possesses; 2. the *ideal* self is the person's representation of the attributes that self or other would like the person, ideally, to possess (aspirations, hopes, goals for that person); and 3. the *ought* self is the person's representation of the attributes that self or other believes the person should or ought to possess (rules, injunctions, duties, obligations for that person). The second postulate is that each person has different self-concepts associated with different standpoints or self-guides on the self. *Discrepancies* among the different domains of the self or between own/other standpoints result in a state of discomfort. This state (of discomfort) can differ in intensity, quality, and contextual variability (Higgins *et al.*, 1985).

The theory provides six basic types of self-state representations: actual/own, actual/other, ideal/own, ideal/other, ought/own, and ought/other. The first two, especially actual/own, are what is typically referred to in the literature as a person's self-concept. The remaining four are self-directive standards or self-guides (Higgins, 1987). The theory postulates that individuals are motivated to reach a condition where one's self-concepts *match* the relevant self-guide. That is, one is motivated to *reduce* or minimize the discrepancies between the actual self and the self-guide(s).

Discrepancies among different domains/standpoints result in specific emotions: 1. *actual/own* versus *ideal/own* discrepancies result in dissatisfaction, disappointment, and fear of failure; 2. *actual/own* versus *ideal/other* discrepancies result in shame, humiliation, misery, anger (from frustration); 3. *actual/own* versus *ought/own* discrepancies result in guilt, feelings of worthlessness; 4. *actual/own* versus *ought/other* discrepancies result in apprehension, fear of punishment, feelings of being threatened, and feelings of panic. The theory proposes that dejection-related emotions, such as *depression*, should be associated more with *actual-ideal* discrepancies while agitation-related emotions, such as *anxiety*, should be associated with *actual/ought* discrepancies (Higgins *et al*. 1985). Furthermore, Higgins formulates the following general hypothesis: the greater the *magnitude* and *accessibility* of a particular type of self-discrepancy possessed by an individual, the more the individual will suffer the kind of discomfort associated with that type of self-discrepancy. Results from a series of studies by Higgins and his colleagues (Higgins *et al*., 1985; Higgins, Bond, Klein, & Strauman, 1986; Higgins, Klein, & Strauman, 1987; Higgins, Van Hook, & Dorfman, 1988) support this general hypothesis.

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[6] In a recent revision of the model (Higgins, 1989b), two more domains have been added: can and future selves.

Relationship of Discrepancy Theory to Self-Concept Negativity

As stated previously, the theory provides six basic types of self-state representations: actual/own, actual/other, ideal/own, ideal/other, ought/own, and ought/other. The first two, especially actual/own, are what is typically referred to in the literature as a person's self-concept. The discrepancy between actual/own and ideal/own - with actual not matching to ideal - is closest conceptually to the concept of *low* self-esteem. Higgins proposes that it is the *mismatches* or discrepancies and not the absolute positivity or negativity of the self-attributes that is crucial for generating negative affect. To answer the question of whether discrepancy is nothing more than another global measure of negative self-concept, Moretti & Higgins (1987) obtained scores on the Selves Questionnaire plus measures of self-esteem. A global estimate of negativity of the attributes from the Selves Questionnaire was also obtained (using norms about the social desirability of the attributes). Discrepancy scores still correlated significantly with scores on self-esteem inventories when global negativity was partialled out. In contrast, the correlation between global self-concept negativity and self-esteem was *eliminated* when the contribution from discrepancy score was partialled out.

Higgins (1989b) proposes that one of the key elements to the predictive power of discrepancy score is the *idiographic* nature of the measures of self-attributes. Other studies of discrepancy typically use a *preselected* list of attributes from which individuals are to choose or rate those that describe their actual and ideal selves most accurately. This type of nonidiographic measure tends to elicit only socially desirable ratings for the ideal self domain, therefore limiting individual differences to differences in the actual self domain only. The use of a idiographic measure also elicit more personally relevant attributes. Because the discrepancy theory deals with the relation between each attribute in the actual and in another self-guide, it is possible for two people to have *identical* self-concepts but to have ***different*** discrepancy scores because of differences in their self-guides.

Developmental Considerations

Higgins (1989a) presents a developmental theory describing individual differences in children's self-concepts, self-regulation, and self-evaluation from the perspective of self-discrepancy theory. The implications of differences in caretaker-child interactions on the development of the child's self-system and emotional vulnerabilities are also examined. Self-discrepancy theory assumes that individuals use their self-guides (ideal and ought selves) for both regulatory and evaluative purposes. That is, the individual monitors his/her behaviors, the actual self, so as to reduce mismatches to the self-guides. A mild discrepancy may produce a negative evaluation but a positive self-regulatory motivation to reduce the discrepancy. Caretaker-child interactions are classified by the outcomes into four categories: presence of positive outcomes; absence of positive outcomes; presence of negative outcomes; and absence of negative outcomes.

Higgins stresses that these outcomes may be actual or anticipated events. Presence of positive outcomes is associated with the child feeling satisfaction and joy; absence of positive outcomes is associated with feelings of sadness, disappointment, frustration, and anger; presence of negative outcomes is associated with feelings fear and distress; and absence of negative outcomes is associated with feelings of security, and reassurance. Higgins proposes that different types of relations between self-state representations represents different types of negative psychological situations. Actual/ideal discrepancies result from the ***absence of positive outcomes*** while actual/ought discrepancies result from the ***presence of negative outcomes***. *Chronic* discrepancies in these domains are associated with dejection-related problems (eg. dissatisfied, disappointed, discouraged, sad) and agitation-related problems (eg.

fear, threat, edginess) respectively.

By the end of the first year, *Level 1*, the child is capable of mentally representing the relation between his/her response and that of the caretaker. By 1.5 to 2 years of age, *Level 2*, the child is capable to perceive self-other contingencies. That is, children can understand the relation between their actions on the world and the emotional responses of others to their actions as well as the psychological situation he/she experiences. They are sensitive to the interpersonal significance of their self-features. They can experience pride, shame, fear of punishment and rejection. By approximately age 4 or 6, *Level 3*, the child can monitor, plan, and evaluate his/her own behaviors by some external or internal standards. Children are motivated to learn the kinds of self-features that are expected, valued, preferred by significant others in their lives (parents, other role models, friends). Feelings of guilt and apprehension are associated with mismatches between the actual and ought selves.

By approximately ages 9 to 11, *Level 4*, true self-discrepancy structures can be formed. They can use a self-guide to appraise a trait they have. Because of the connections between traits, the self-evaluation process for *one* self-feature can activate the child's *entire* self-discrepancy system. This also implies that a negative psychological situation (the experience of negative affect) can be induced as long as a child possess a *stored* self-concept that is discrepant from a self-guide. Children at this level of development are motivated to have their dispositional traits match as a *whole* from the standpoint of the significant other(s). Although children are better at self-regulation, the task of minimizing discrepancy (between actual and self-guides) is increasingly more difficult. By approximately ages 13 to 16, *Level 5*, it is possible for the adolescent to have two distinct self-guides: one involving the parental standpoint, another involving a peer standpoint. It is also possible for a self-concept to be highly regarded (matched) in one self-guide (parental) but despised (mismatched) in another self-guide (peer). This type of discrepancy is associated with feelings of uncertainty and confusion.

Competence-Based Model of Self-Worth

In her work in the area of the development of the self and self-concept, Harter and her colleagues have conceptualized *perceived competence* as the critical determinant of self-worth.[1] In her review of models and measures of self-concept, Harter (1985) identified several approaches. Each is based on a different conceptualization of the self and each implies a different assessment strategy. These approaches are: (1) *unidimensional*, (2) *intermediate* between unidimensional and multidimensional (such as the Piers-Harris scale {Piers, 1984}), (3) *multidimensional/hierarchical* (such as the work of Shavelson and his colleagues {Shavelson, Hubner, & Stanton, 1976}), (4) *modified* unidimensional (such as that of Rosenberg's work {1979}), and (5) *combined* multidimensional and global approach where there is a focus on specific domains as well as one's sense of global self-worth. Harter's model is an example of this approach.

Measurement of Competence and Self-Worth

Harter (1982, 1984) conceptualized that competence can be divided into five specific domains: scholastic competence, athletic competence, social acceptance, physical appearance, and behavioral conduct. The *Self-Perception Profile for Children* scale provides a separate score for each of these domains. In the original model, as measured by the *Perceived Competence Scale for Children* (Harter, 1982), there were only three salient competence domains: cognitive or scholastic competence, physical or athletic competence, and social competence.

Unlike the measure of competence where children were asked to respond to a standard questionnaire, Harter and her group devised an innovative *idiographic* method to elicit self-descriptions (Monsour, 1985). The method was originally designed to measure the development of opposing attributes and its possible affective component (such as conflict). Each child was asked to write self-descriptions, traits, on gummed labels. These were then placed on a sheet with three concentric circles labeled: "most important", "less important", and "least important" starting from the inner to the most outer circle. The placement of the traits reflected the importance of that trait to the child. Harter (1986b) noted that positive traits were most likely to be placed in the innermost circle while negative traits were usually found in the outermost circle.

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[1] Harter uses the term "self-worth" specifically instead of self-esteem because she has used *competence* as the key determinant of the self.

Competence and Perceived Control

In the investigation of perceived competence, perceived control plays a crucial role. Using a scale of measuring perceived control developed by the group, Harter (1985) found that perceived control was positively correlated with perceived competence. The scale provides four separate scores: combining internal versus external causes and success versus failure outcomes. When the child does not understand or know *what* controls his/her successes and failures in a particular domain, the child also has *low* perceived competence score in that domain. Using Greenwald's concept of "beneffectance" where it is the "tendency to take credit for success while denying responsibility for failure"(Greenwald, 1980, p. 605), Harter divided children into four types according to their patterns of control scores for the *cognitive* domain (Harter, 1985).

The four types, based on a sample of 300 third through sixth graders, are: strong form of beneffectance, weak form of beneffectance, high internality, and self-blame. The *strong beneffectance* group is characterized by internal success score greater than internal failure score; internal success greater than external failure; and internal failure less than external failure. The *weak form* is different from the strong form in that the internal failure is *greater* than instead of less than external failure. The *high internal* group is characterized by equal internal scores regardless of success or failure; these are in turn both greater than their external counterparts. The highest score for the *self-blame* group is the internal failure score; it is higher than the internal success, external success, and external failure scores. That is, they take *more* responsibility for the failures than successes.

Harter (1985) found that 88% of the children in the sample had clearly delineated types with approximately half of them showing the high internality pattern. These children showed the highest perceived competence, highest preference for challenge and lowest scholastic anxiety. A cross-sectional analysis of grade 4 to grade 9 students revealed an interesting reversal in the percentage of weak beneffectance and high internality groups. High internality decreased steadily from 40% in grade 4 to 20% in grade 9 while weak beneffectance increased from 35% in grade 4 to 65% in grade 9. Percentages of strong beneffectance and self-blame were consistent across grades: at the 8 to 10% range. Harter (1985) interpreted that as children gradually come to adopt a pattern that provide a certain degree of *self-protection* or *enhancement*. She also noted that the finding also disputed the "value-laden assumption that internality is somehow 'better' and should increase with age" (p. 113).

Social-Cognitive Model: Role of Maturation

Leahy (1983) and Leahy & Shirk (1985) propose a three-level model describing the development of the self. The model derives from Mead's work on role-taking, Kohlberg's work on moral development, and Piaget's work on developmental stages. Some of the issues addressed are: the cognitive aspect of role-taking, the development of disparity between social self-image and real self-image; the development of a private versus a public self; and the development of self-description. One of the points stressed by Leahy & Shirk is that the *level* of the child's cognitive development is crucial in any discussion of self-concept.

The model consists of three levels. For *level one*, the young child (around age 5) does not differentiate between the inner self and the world around him/her. The emphasis is on *physical* qualities (eg, appearance). The conceptualization of the self is *objective*. When asked to describe oneself, the qualities/concepts are concrete, physical (eg, height, age); the focus is on peripheral (away from the inner self), or observable characteristics. There are no real disparities between the real and ideal self-images. By about age 10, the child enters the *second level*. This is characterized by the development of a *subjective* self. The self-descriptions are more psychological: traits, attributes, motivations. The child is able to *decenter* from the peripheral to recognize more covert, inner or psychological attributes of the self. These can be role dependent, such as by gender. The child is sensitive to the *expectations* and stereotypes established by others - parents and peers. He/she values the perspective and opinions of others. There may be increased real and idea self-image disparity. There may be a separation between the private and public selves. The *third level* is called the *subjective-process* level.

There is a gradual development of role independent behaviors. Self-descriptions are seen as *varying* across time and situations rather than static and non-changing. There is an attempt to integrate apparently conflicting qualities in the self, such as between masculine and feminine traits. There is a decreased emphasis on the standards/expectations of others and an increased emphasis on self-chosen principles.

Role of Cognitive Development on Self-Concept

In a summary of different social-cognitive theories of self-concept, Leahy (1985) stressed the interrelationship between cognitive development and self-concept development. The overriding assumption of many theories is that the child actively constructs his/her self through *qualitative* changes in content and process of self-definition. This *pace* of this development is determined by the cognitive development of the child. An infant who has not developed the awareness between self and his/her environment has no *distinct* concept of the self. Similarly, a child cannot have self-conflicts when he/she cannot hold two *opposing* traits of the self at any one point in time.

Pertinent to the issue of self-conflicts is Harter's investigation the developmental process for the experience of emotions (Harter, 1986a). The critical elements for the simultaneous occurrence of emotions are *valence* (positive or negative) and *target* (same or different). There are four developmental stages or levels to this process.[1] At *level 1*, approximate age of 7, the child can acknowledge the existence of two different emotions for the same target (eg, "I was happy and proud that I hit a home run"). At *level 2*, approximate age of 8 or 9, the child can acknowledge same emotions for different targets (eg. "Both my brother and I were sad because we lost the game."). At *level 3*, approximate age of 10, the child can acknowledge different emotions for different targets (eg. "I was sad that I lost the game but my best friend was happy because his team won."). At *level 4*, approximate age of 11, the child can acknowledge different emotions for the same target (eg. "I can be happy about the vacation but sad that I am leaving my friends behind."). It is only at this last stage or level that the child can *truly* experience self-conflicts.

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[1] Harter has identified a *level 0* (approximate age of 5) where the child is unable to put two feelings together or simultaneously (eg. "It's hard to think of two feelings at the same time because you only have one mind!").

To return to the discussion of change, Leachy (1985) stated that a change in content can involve a change in the audience which evaluate the self, a change in the areas of self-conflict, and a change in the degree to which one can verify aspects of the self. For the change in *audience*, Leahy (1985) noted that a young child may see the parent or adult as the audience - who will judge his/her behavior. For the adolescent, the evaluator becomes increasing the individual him/herself. As a child develops, the domain of competence that are perceived most important changes - from more behavioral to more abstract ones (Harter, 1985). In elementary school, it is important to be good in the gym or playground (competence in the physical domain); in high school, it is more important to be accepted (competencies in the interpersonal and perhaps cognitive domains). Finally, for a young child, it is relatively easy to verify, to know, one's age and hair color - attributes that are considered part of the self. On the other hand, as an adolescent, it is considerable harder to verify that one is morally and socially mature.

Clinical Implications of Self-Concept Development: Costs of Development

Leahy (1985) reviewed some of the clinical implications relating to the developments of the self: one, through an examination of the consequences of dysfunctions of self-developments and two, through an examination of the consequences of development. He proposed that certain forms of *psychopathology* are partly a consequence of *higher* developmental level. That is, there are both positive and negative consequences to higher development and that some disorders may be a function of higher and *not* lower development. By viewing development from this perspective (of cost), he was able to form some developmental hypotheses about self-critical depression and agoraphobia.

Leahy noted that self-schemes, formed at a particular age/stage of cognitive development, carry with them the *limitations* in thinking of that stage. He examined the cognitive schemes of individuals who are depressed and noted that they have many of the qualities of pre-operational thought. For example, the person's tendency to overgeneralize from one incident and to engage in dichotomous thinking represent a egocentric type of logic.

Guidano & Liotti (1983) proposed that the *type* of self-schemes formed affects the child's information processing: the child will selectively attend to only schema-*consistent* information and discount or fail to recall schema-*inconsistent* information. When these schemes are negative, the child is likely to attend to only negative information, such as failures and rejections, and not attend to successes and acceptances. Leahy suggested that these self-schemes may be dormant but will remain *intact* to the degree that the individual will lack *opportunities* to disconfirm these schemes. For the depressed individual, avoidance of social contacts because of the potential for rejection also means that the individual *prevent* any opportunity for obtaining any positive consequences from social interactions.

When a young child experiences a loss or rejection, even if that loss is temporary, his/her relatively primitive cognitive development may encode that as: no matter what I do, it can be taken away. "This early loss may establish a *perspective of vulnerability* such that actual or potential subsequent losses activate more infantile schemes of threats to psychobiologial integrity" (Leahy, 1985, p. 274). Early schemes such as "I never can do things for myself"; "I cause bad things to happen"; and "Others can take care of me" set up limitations to subsequent cognitive development as well as affective vulnerabilities.

Leahy (1983) proposed that the older child or adolescent is at a greater risk for depression because of *higher* social-cognitive skills. Focusing on the most depression-prone attribution style: attributions of failure to personal, internal, stable, and global causes, Leahy suggested that these skills are make possible through higher cognitive development. For example, in order to feel inferior, the child must be able to make comparisons to others (typically). Similarly, older children can make more attributions to stable, internal, and global personality traits: "I failed here because I am stupid and I will continue to fail because I am stupid."

Leahy suggest that belief in *hopelessness* is the consequence of higher developmental level. In order to feel hopeless, the individual must have a sense of time - future. A future time perspective - the cognitive ability to anticipate the nature of the future - is an ability that is only apparent in adolescents and adults. The hopelessness in depression is also perpetuated by the belief that there are stable personality deficits that maintain the individual in this current depressed state. The belief in stable personality traits is a developmental phenonemon. Most children believe that they can "outgrow" their frustrations and failures. A young child being bullied by other children may say that: "Wait till I grow up"; "I'll run away (when I am bigger)". These reflect the implicit cultural belief that "growing up" is equivalent to *process*, which implies relief from suffering. It is only with advancing age that an individual comes to believe that there may be no more "growing" and one is "stuck" with the deficits.

Role of Social-Emotional Development for Beck's Theory of Depression

As stated in the presentation of Beck's theory, it ~~does not~~ really address the developmental aspect of depression. Beck does not state, for example, when prepotent depressive schemas are laid down in a suspectable individual. The work reviewed in this section: Higgins, Harter, and Leahy on normal social, cognitive, and emotional development are all relevant for the understanding of the abnormal development and of depression in particular. Higgins's self-discrepancy theory, especially the correlation between actual/ideal discrepancy and depression, bears most directly on Beck's postulates. According to Higgins, it is the *mismatch* between the individual's actual self and his/her ideal self that result in dejection-related problems: that is, when one is not living up to one's (or others) standards, it results in feelings of sadness, discouragement, and disappointment.

This is similar to Beck's position that it is the negative evaluative aspect of depressogenic schemas and the resultant feelings of personal *deficiencies* that results in the genesis and maintenance of feelings of dysphoria. Some of the unrealistic expectations of the depressed individual - such as being responsible for every happening - can be regarded as examples of ideal self-guides of Higgins. The reality that one is not able to fulfill these expectations - or the discrepancy between actual and ideal selves - results in depressed affect. Although Beck does not elaborate on the origins of these expectations, it would not be incorrect to propose that they were learned from the child's early experiences. Higgins has provided a scheme for classifying modes of caretaker-child interactions that might result in different types of actual and self-guide discrepancies.

The works of Harter and Leahy are complementary. Harter's work provides that normative information regarding the interrelationship between cognitive development and emotional maturity. Self-conflicts are *not* possible until the child can hold opposing views of the self at the *same* time. Leahy's approach is somewhat similar. He asserts that development or maturity increases the child *vulnerability* to certain psychopathologies - namely depression. The experience of hopelessness, a central feature of Beck's theory of depression, is only possible when the child has the concept of time and the future.

Leahy also notes the relationship between development and self-schemes. Schemes formed at an early age, such as the preoperational stage, carries with them limitations of that age. Many of the cognitive "errors" of depressed individuals documented by Beck resemble the kind of thinking in young children (eg, overgeneralization, dichotomous thinking). Leahy then examined the impact of trauma, such as parental separation or rejection, on the development of self-schemes. He concluded that the resultant self-schemes are likely that of *incompetence* (eg: "I can never do anything by myself."), *vulnerability* (eg: "I cause bad things to happen."), and *dependency* (eg: "If I do well, others will like me."). This provides a framework for understanding the implicit relationship between early traumas and the vulnerability for depression in later life.

Self-Esteem: Conclusions and Implications

The importance of self-esteem in the overall maintenance of mental health cannot be overstated. Its role in the etiology and expression of depression has been well documented in the literature. The review in this section focused on some of the developmental sequences for the acquisition of one's self-concepts and the crucial role of cognitive *maturation* on affective development. Harter's research focused on the prerequisites for experiencing self-conflicts; Leachy's work focused on the affective costs of cognitive maturation. Although Beck's theory of depression places a great deal of emphasis on the role of dysfunctional schemas, it is not very explicit about the etiology of these schemas. The research of Higgins and associates in particular can be seen to be complementary to Beck's earlier theorizing.

Locus of Control Construct

The construct of locus of control (LOC) has probably been most associated with J. Rotter. In his monograph in 1966, J. Rotter published the Internal-External Scale (*I-E*). LOC is theorized as a bipolar construct. A person with an internal LOC perceives that there is a reasonable contingency between his behaviors and events in his world. A person with an external LOC believes that events are outside of his control, rather they are due to luck, fate or others). Rotter theorizes that this construct is a generalized expectancy that can be used to *predict* a wide range of the person's behaviors. This prediction is particularly relevant when the demand characteristics of the situation is ambiguous. The hypothesis was that the single score on the *I-E* Scale can be used to predict behaviors in a wide range of situations. The publication of the *I-E* scale generated an enormous amount of research into the LOC construct. By 1971, a literature review by Joe (1971) revealed that hundreds of studies had been conducted using the *I-E* scale.

In his original conceptualization and scale construction, Rotter found that there was only one general factor for the *I-E* scale. However, subsequent research by others quickly found conflicting results. Not only did subsequent researchers fail to replicate the original finding, they pointed out methodological problems with Rotter's original scale construction (eg, Prociuk, 1977). The one-factor theory was disputed as others found multiple factors in their samples (eg, Mirels, 1970; Reid & Ware, 1973).

Rotter (1975) refuted some of the criticisms of the *I-E* scale. He reiterated that because the *I-E* scale is intended to be a measure of *general* expectancy, the type of predictive power for any specific situation is *not* expected to be strong. "A very broad measure has the advantage that it can be used to explore a large variety of possible theoretical and practical problems without necessitating the years of research necessary to develop the more specific instrument for every purpose. Such a measure, however, is necessarily limited to a lower level of prediction." (p. 59). For the critique of dimensionality of the LOC construct, Rotter countered that the factor analytic technique itself does *not* reveal the true structure of a concept. If subscales/factors were found, the real test is to demonstrate that these subscales/factors produce a *higher* correlation with a predicted behavior than the total test itself.

The critiques of the *I-E* scale have resulted in two major thrusts with respect to LOC research. One, there has been a push to develop new scales to measure LOC; all of which are multidimensional (Levenson, 1974; Reid & Ware, 1974). Two, these new scales have moved away from the global score and became very situational specific (eg., Lefcourt *et al.* scales for acheivement and affiliation, etc).

This development is not entirely without methodological problems. Some of the research that found more than one factor were using modified versions of the original *I-E* scale. For example, Collins' four-factor scale had in fact separated the original 26-pairs of items of the *I-E* scale into their individual items. Thus, the respondent was no longer using a forced-choice format; every alternative was rated on a likert-type scale. Although others had raised legitimate criticisms of the unequalness of the alternative pairs, there had been little research on the effect of different scale *formats* on the dimensionality of the LOC construct. Others, like Lefcourt, disagreed with Rotter's one-factor conceptualization and proceeded to construct scales that are situation or content specific and multidimensional. However, since all the new scales show substantial correlations with the original *I-E* scale, all scales are tapping into a similar construct (see review in the section: Factor analysis of the Rotter's *I-E* scale). The other point to consider is that while many of the studies revealed multiple factors, these are all differentiations of the *external* dimension of the LOC construct. That is, the internal dimension has remained as a singular pole; it is the *external* one that has been divided.

There are more than one way to proceed for scale construction. Certainly, if one begins with the conceptualization that the LOC construct is multidimensional, then the final scale should reflect that. However, Rotter's started with the concept that LOC was unidimensional, and the *I-E* scale was intended to be the same.

For researchers wanting to work with the Rotter's Scale, the lack of Rotter's original data had prevented other researchers from attempting to re-factor the scale (to correct the methodological error). Marsh and Richards (1986) argued that although traditional factor analyses have suggested that more than one factor is needed to account for a substantial amount of variance, that finding *alone* does not negate the original unidimensional aspect of the LOC construct. They reanalyzed 12 studies that had used the original Rotter scale by using confirmatory factor analysis rather than exploratory factor analyses. They found evidence of both *multiple* factors at the first level but there was also evidence of a higher or second-order *general* factor. They conclude that there is partial support for Rotter's original thesis that LOC is a unidimensional construct but that exclusive use of the general score would probably be *counter-productive* because of the loss of *specificity* of the subcomponents of LOC that can be potentially assessed. However, they also caution against the use of most of the current alternative scales available, citing that the reliabilities are generally *weak*.

Attribution and Psychological Control

This section presents some of the theoretical discussion of the locus of control construct and its relationship with other related constructs. Much of this discussion has to do with the relationship of attribution and psychological control. In their review of the attributional literature, Fiske & Taylor (1984) established the centrality of control in the study of attributions. Attributions are made about behaviors and events for the purpose of maintaining or establishing control. Locus of control is but *one* aspect of the attributional process.

Fiske & Taylor distinguish among the following constructs: attributed causality, control,[9] freedom, and responsibility. These concepts are interrelated and a judgement of the appropriateness of a person's attribution depends on the various contributions of each of these components. Although attributions of control, causality, freedom, responsibility do not have to occur concurrently (Fiske & Taylor, 1984), attributed responsibility can be viewed as the end-product of the other processes. That is, the judgement of responsibility is dependent on the other processes. An awareness of the assignment of responsibility - self or other - factors - for a particular event/behavior is important because that helps one to understand and perhaps predict subsequent behaviors.

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[9] Note that this use of the term *control* is different from the use of the term in *locus* of control. Locus of control, internal or external, usually does not consider the *dimension* of ability.

Relationship with Locus of Control

Within the context of attributional theory, locus of control concerns the belief whether reinforcements are contingent with one's behavior, internal locus, or not contingent, external locus. When one has an internal locus, one sees the *self* as the causative agent; when one has an external locus, one sees factors *outside the self* as causative agents. When the locus is considered with responsibility, an internal locus should result in *more* attributions of responsibility than when the locus is external. It is less clear whether a distinction can be made regarding causes or solutions. Wong & Sproule (1984) suggest that one perceives *internal* control when one assumes full responsibility for what has happened *regardless* if the event is externally caused. One perceives *external* control if the *responsibility* of the outcome resides outside the individual regardless if the event is directly caused by the person. A study by Phares, Wilson, & Klyver (1971) suggested that there is an interaction between cause and locus of control. When there has been an obvious distraction, both internals and externals blame their failure performance to the distracting condition. However, when there is no distraction, internals tended to blame themselves while externals tended to blame external factors. The study did not examine the issue of responsibility.

Individual differences in the locus of control also should affect a person's reactions to the *loss* of control. Using the assumption that loss of control is aversive and that the individual will be motivated to regain control, Fiske & Taylor (1984) identified possible behaviors subsequent to a loss of control: increased information seeking behavior, increased (physiological) reactivity to stress, reactance, and helplessness. Of particular interest are reactance and helplessness. Reactance is most likely to occur when expected or existing control is *arbitrary* threatened or withdrawn. Individuals are likely to respond with angry or aggressive feelings. Helplessness can be contrasted to reactance. The individual makes no attempt to restore control; in essence the individual gives up.[10]

Individuals with an internal locus of control would likely choose strategies for regaining control that emphasize actions by the *self*. Those with an external locus might choose strategies that *would not* involve the self, such as information gathering. Fiske & Taylor (1984) propose that internals need (personal) control while externals need only predictability.

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[10] Please see the section on perceived control for an alternative interpretation on helplessness behavior.

Working from a slightly different emphasis, Hiroto (1974) examined the interaction of the learned helplessness and locus of control. The experiment included the learned helplessness paradigm (escapble versus unescapble aversive pretreatment) and instructional sets to influence attributions of ability or chance. Externals, regardless of pretreatment or instructional set, were slower to escape the subsequent aversive condition than internals. Hiroto concluded that the locus of control construct - externality - functioned as if it was another pretreatment variable of unescapability. He further speculated that there is one process underlying learned helplessness, externality and perceptual set of chance: the expectancy of noncontingency between behavior and reinforcement.

Consequence of Attributions of Causality to the Self

The literature in this area has conceptually divided the attributions based on the positive/negative or success/failure dimensions. Much of this research has to do with the attributional analysis of depression and was reviewed in that section. For this discussion, the focus is the effect of attributions of causality of success/failure events and the locus of these attributions - self (internal) or other (external). The depression literature has demonstrated that it is attributions of *failure* events to internal/stable/global characteristics that are most characteristic of depressed individuals and most predictive of future episodes. The literature of locus of control shares with the depression literature with respect to the internal versus external dimension but does not make distinctions about the global/specific and stable/unstable dimensions. For those individuals who tend to make internal attributions - regardless of whether the event is success or failure (or positive or negative), they should be *more prone* to depressive affect than individuals who make external attributions (Lefcourt, 1982).

This prediction has not been supported in the literature: the usual finding has been a positive correlation between depression score and externality scores on measures of locus of control. However, these studies have been correlational. A better test of the hypothesis would be the use of a longitudinal design where individuals are followed over time: those who score more internal on locus of control measures should tend to make more internal/stable/global attributions and they should be more prone to react with depressive affect when faced with failure events (Lefcourt, 1982).

Two-Process model of Perceived Control: Role of Helplessness Behaviors

Rothbaum, Weisz, & Snyder (1982) postulate a two-process model of perceived control, reconceptualizing what has been considered helplessness behavior from theories of learned helplessness and locus of control. These researchers propose that what are considered helpless or inward behaviors, such as passivity, withdrawal, submissiveness, are *not* signs of relinquished control. That is, these behaviors do not necessarily mean that the individuals have given up the *attainment* of control; the control is manifested in a different form. They postulate that control is a two-process construct. The first process or *primary* control "involves attempts to change the world so that it fits the self's needs" (p. 8). Primary control is the type of control referred to by other control theories. *Secondary* control is activated when primary control is met with resistance. Secondary control are "attempts to fit in with the world and to flow with the current" (p. 8). Secondary control behaviors - passivity, withdrawal, submissiveness - reflects a later stage of reaction to stress; these are typically preceded by the failure of other behaviors, such as anger and protest, to produce changes in the individual's environment. Neither process is thought to exist in pure form; often these are intertwined. Optimal adaptation is defined as the *coordination* of these.

Secondary Control Processes

Rothbaum *et al.* (1982) classify of control behaviors into four types: predictive, illusory, vicarious, and interpretive. Within each type, one can *distinguish* between primary and secondary control processes. For example, within *predictive* control, attempts to predict events so as to succeed at them are indicative of the operation of *primary* control processes while attempts to predict events so as to avoid disappointment are indicative of the operation of *secondary* control processes. Activation of secondary control processes, such as accurately predicting uncontrollable events, is adaptive because they *avoid* unfulfillable expectations.[11]

They reinterpret findings of low self-esteem individuals' tendency to avoid tasks completely or to participate only minimally even if they realize that the chance of success is high as the *avoidance* of disappointment rather than passivity or giving up. The seemingly *self-defeating* behavior, justified by these individuals as their ability to avoid disappointment, is seen as their last line of defense.

Rothbaum *et al.* propose that when individuals who typically rely on primary control (such as those having a high motivation for success; those having a high internal locus of control) experience prolonged and persistent *unsuccessful* attempts at primary control, they are likely to "give up", to experience perceived uncontrollability. They are at a disadvantage (than those who rely on secondary controls) because they lack the time and energy to *learn* secondary control processes. The two-process model of control differs from the perceived uncontrollability model in that adaptiveness is viewed in terms of the relative levels of primary *and* secondary control rather than a prevalence for primary control *alone*. Adaptiveness is the *knowledge* of how and when to exert these two types of processes and how to integrate them. For most competitive and aggressive situations, primary control is best. For dealing with the irreversible effects of paralysis, the finding of meaning and the acceptance of the disability are best. This two-process conceptualization of control has implications for the study of depression and other seemingly helpless and self-defeating behaviors.

Alternative Models of Locus of Control: Attempts to Improve Rotter's I-E Scale

Since the publication of the *I-E* Scale, interest by other researchers in both the assessment of locus of control and the conceptualization has resulted in many new scales and models. Some of alternative scales used the original scale as the starting point, some used entirely new items. Different conceptualizations of the locus of control construct has resulted in alternative models with different factors and dimensions. This section presents some of these developments.

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[11] This is consistent with the hypothesis that depressed individuals have a more accurate perception of reality (Alloy, Abramson, & Viscusi, 1981).

Four-Factor Model

Collins (1974) applied a person-perception/self-perception perspective to the *I-E* Scale. From that perceptive, individuals' causal attributions can be divided into two dimensions: 1. Predictability and lawfulness versus chance. 2. Situational versus dispositional attributions. Collins also asserted that the forced-choice format of the original scale prevented the identification of other possible factors. In order to apply the person/self perception perspective to the *I-E* Scale, the 23 pairs was separated, creating a scale of 46-items. Respondents were instructed to rate each of these 46 items (agree-disagree). The separation of the pairs was based on the analysis that the alternatives were not always equivalent.

Factor analysis of responses from 300 undergraduate students revealed a general factor plus four subfactors: 1. Difficult-easy world, 2. Just-unjust world, 3. Predictable-unpredictable world, and 4. Politically responsive-unresponsive world. The general factor has 33 items with loading of at least ±.30. The 4 subfactors accounted for 76.3% of the variance. Eight of the 46 items failed to load greater than ±.35 on any factor. Scores on the 46-item format and those from the original forced-choice format were highly correlated (.82). Collins used this finding to conclude that these two forms essentially measure the same underlying construct. This 4-factor model has been replicated on a sample of 165 subjects (Zuckerman & Gerbasi, 1977).

Three-Factor Model

Levenson's 3-factor model proposes that the source of control can be differentiated into: internal, chance, and powerful others (1974). Essentially, the model expanded the differentiation of the external dimension into those who believed in chance and those who believed in powerful others as controlling events in their lives. Instead of working from the *I-E* Scale, three new scales were constructed: I, P, and C. The 8-item 6-point likert scales were all constructed with referent to the self rather than to "people in general"; no item required any speculation of modifying any specific issues. The scales had moderate internal consistency and test-retest reliabilities. Scales P and C showed moderate correlation ($r = .59$) while both were not significantly correlated with scale I. Factor analyses of the scales using 329 male undergraduates resulted in three major factors: 1. Factor 1 (16.8% of variance) containing only P items; 2. Factor 2 (9.7% variance) containing only I items; and 3. Factor 3 (6.4% variance) containing only C items. Only 7 out of 24 items did not load any of these three factors. The use of these scales allows for a more detailed profiling of an individual's perceptions of control.

Two-Factor Model

Using factor analytic and multiple regression techniques, Reid & Ware (1973, 1974) propose that the *I-E* scale is multidimensional. Based on the original 29-item scale, two factors were found: fatalism, social system control. These factors were similar to those identified by Mirels (1970). Subsequent refinement included addition of new items for the social system control subscale and the rewording of some of the *I-E* items. Following some indication that previous research has not adequately differentiated the self versus others distinction in the source and target of the control, Reid & Ware added items concerning self-control to the final scale, creating a scale consisting of 40 items. Factor analysis revealed three factors: fatalism (12 items), social system control (12 items), and self-control (8 items). The Self-Control factor contained only items that were explicitly added. These results were essentially the same as their first study (1973); none of the original *I-E* items were included in the Self-Control factor. Therefore, introduction of self-control items did not added a third dimension to the *I-E* scale. Interscale correlations ranged from .27 to .39 with scale internal consistency ranging from .71 to .76.

Spheres of Control

Paulhus & Christie (1981) propose that locus of control measures have ignored the domain of interpersonal behaviors. The Spheres of Control (SOC) model focusses on three primary spheres: ***achievement*** (personal efficacy), ***interpersonal*** (interpersonal control), ***socio-political*** (socio-political control). These three areas are conceptualized as concentric spheres, with the achievement closest to the centre.[12] An individual can have very different expectancies of control in each of these three domains. The Spheres of Control battery comprises of three scales developed to measure the different levels of control in these three areas.

The scales were developed using factor analytic techniques. The final 10-item scales have reasonably strong internal consistency (alphas of .75, .77 and .81 for Personal Efficacy, Interpersonal, and Sociopolitical Control scales respectively). The scales, all keyed in the internal direction, correlates negatively with the *I-E* scale (*rs* of -.28 to -.50). Different combinations of high versus low scores in each of the scales (such as high-Personal Efficacy, low-Interpersonal, high-Sociopolitical) have the potential for providing fine distinctions of individual differences in the area of perceived control.

Origins and Pawns

deCharms (1981) espoused the distinction between locus of control of reinforcement (of Rotter) and locus of causality for behavior (of Heider). He stressed the perception and experience of personal causation, that is, the locus of causality for behavior, were quite different from the locus of control. He used the term ***origin*** for a person who experiences locus of causality for behavior as ***internal*** and ***pawn*** for a person who experiences the locus as *external*.

deCharms (1976) derived an origin score that had six subcategories based on analysis of thought samples (prompted short stories based on specific lead-ins). There are six stories solicited. Each story was also classified as being ***idealistic*** or ***realistic*** (with respective to the goal). The origin measure has been shown to be reliable (split-half and inter-scorer reliabilities).

Realism-Idealism

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[12] A fourth level of possible perceived control, the self, is conceptualized as the innermost sphere but no consistent empirical evidence was found.

Wong & Sproule (1984) suggest that Rotter's *I-E* scale incorporate the realism-idealism dimension. Subjects were asked to state their reasons for choosing either alternatives on the *I-E* scale, on a 7-point likert scale. Internal alternatives were generally chosen because of ideals while external alternatives are chosen because of reality considerations. Wong & Sproule propose that individuals that score extremely internal are *idealistic-optimistic controllers*; they are characterized by a strong desire for control to the extend that reality may be distorted. Extremely high scoring individuals (high externals) are *unrealistic-pessimistic controllers*; they underestimate their capacity to control and overestimate the strength of external constraints. Wong & Sproule assert that interpretation of the *I-E* scale needs to consider the realism-idealism dimension.

Wong & Sproule further propose that individuals scoring in the mid range can be referred as *realistic* internals/externals because they are realistic about the limitations of personal control and are not too pessimistic about the world. They suggest that the construct of locus of control should be dual-dimensional or bipolar rather than unidimensional. This allows an individual to be high on both internal and external dimensions. *Bilocals* are individuals that have both internal and external loci of controls - depending on the situation. Wong & Sproule assert that it is the bilocals are in the best position to deal with a wide range of situations; they are the most *adaptive*. The duo-dimensional view of locus of control promotes a more cooperative relationship with others and a more flexible way of coping with stress.

Multi-Dimensional Model

Lefcourt, von Baeyer, Ware, & Cox (1979) developed a new scale for assessing locus of control: the Multidimensional-Multiattributional Causality Scales (*MMCS*). The *MMCS* were specifically designed to be goal specific (achievement or affiliation), with items balanced between success and failure experiences, with causal attributes balanced for internality-externality and stability-instability. The *MMCS* consist of two 24-item likert scales, one for achievement, one for affiliation. There are four levels of aggregation: total score (24 items); internal versus external (12 items each); stable versus unstable attributions

(6 items each); and success versus failure (3 items within each attribution). Stable attributions are ability and effort; the unstable attributions are task and luck.

A variety of scores can be generated from the *MMCS*. Unlike the *I-E* where internality and externality scores are *reverse* of each other, the *MMCS* allow for *independent* measures of internality and externality. This is similar to the proposed construct of Wong & Sproule (1984). The *MMCS* are psychometrically sound, with good internal consistency and test re-test coefficients. The *MMCS* are correlated with the *I-E*; with coefficients ranging from .23 to .62 for the achievement subscales and .37 to .55 for the affiliation subscales. In order to investigate the moderating effect of LOC and stressors, a study was conducted looking at relationships among negative life events, locus of control and mood states (Lefcourt, Miller, Ware, & Sherk, 1981). Overall, negative life events was the best predictor of mood disturbance. The *I-E* scale was better than either of the *MMCS* scales.

Lefcourt (1981) observed that since there can be a wide variety of negative events, the *I-E* scale should be a better predictor than the *MMCS* because the *I-E* measures generalized expectancies while the *MMCS* focus on specific goals (achievement or affiliation). Had the negative events been confined to achievement or affiliation types, the *MMCS* would likely been superior. Lefcourt concluded that both types of scales - general and specific - have a place in the LOC research, each is useful depending on what the research questions are.

Constructivist Analysis

Tyler, Gatz & Keenan (1979) proposed another strategy to deal with the use of the original Rotter's *I-E* scale while acknowledging the finding of others of multidimensionality. Instead of using factor analytic techniques, a constructivist analysis was performed on the scale. From reviews of the literature, these researchers identified four relevant distinctions. These are: 1. personal versus impersonal focus; 2. area of activity; 3. world attribution; and 4. self attribution. These dimensions are *nonorthogonal* (ie., each alternative receive a classification on each of these dimensions). For this study, the world and self attributions are of particular interest. *Each* alternative on the *I-E* scale was classified on these dimensions. Each dimension has two *orthogonal* poles. For the world attribution, the two poles for external alternatives are *controls by powerful others* or by *non-controllable others*. For the self attribution, the two poles for the external alternatives are *self as passive agents* or as *victims*. For each of the internal alternatives the corresponding world attribution poles are: *internal or controllable collective*. For the self attribution, there is only one pole: *self as active agent*. For this study,the differentiation of the *external* poles for the world and self attributions are of specific interest. The use of these component scores is explained in greater details in the section on Treatment of the Data.

Factor Analysis of Rotter's I-E Scale

Parkes (1985) in reviewing the factor analytic studies of the *I-E* scale observed that there had been confusion in the dimensional characteristics of the scale. Although the most common number of factors found was 2, as many as 9 had been found. Parkes proposed the use of a new mathematical technique to determine the goodness-of-fit of factor solutions. The Very Simple Structure (VSS) analysis determine the optimal number of interpretable factors that should be extracted from a data set (Revelle & Rocklin, 1979). A VSS goodness-of-fit index is calculated for each factor solution; the index ranges from 0 to 1.0 with 1.0 indicating the most optimal solution. The VSS method was more accurate than commonly employed psychometric rules in revealing the true number of factors in artificial data sets (Revelle & Rocklin, 1979).

Using the *I-E* scale data from a non-clinical British sample (406 undergraduate students), the two-factor varimax solution had the largest VSS index. There was virtually no difference in the VSS index when an oblique rotation was used. When the sample was separately analyzed by gender, the two-factor solution was also the most appropriate. The pattern of loadings was the same for both samples. Parkes concluded that research with the *I-E* should only extract *two* factors.

Using the same technique of the VVS index, McInish & Lee (1987) found that a 1-factor solution was the most parsimonious (with the largest VSS index), accounting for 15% of the variance. Items that loaded greater than ±.4 were: items 6, 11, 12, 15, 16, 17, 18, 25, and 28 (items 4, 5, 9, 13, 12, and 29 loaded between .30 and .396). McInish & Lee observed that the difference with Parkes's study may be the difference in the initial factor extraction: Parkes' study used principal-axis extraction (use of squared multiple correlations as communality estimates) while McInish & Lee used principal-component extraction (use of a row of 1s as communality estimates). When their data was analyzed using the principal-axis extraction, the 2-factor solution had the largest VSS index. The factor loadings were similar between the studies.

Interrelationships Among Locus of Control Measures

Ashkanasy (1985) examined the factor structures of 2 scales that measure locus of control: *I-E* Scale, and Collins's four-factor scale. Scale format, forced-choice or likert-type, and the impact of social desirability in the assessment of locus of control were also examined. A sample of 536 first-year undergraduate students completed the *I-E* or the Collins' scale, and the Marlowe-Crowne social desirability scale (Crowne & Marlowe, 1960). Social desirability scores were correlated with the likert format but *not* with the forced-choice format. The problem of social desirability *contamination* of the likert format is consistent with that found by Rotter (1966).

The scales were subjected to confirmatory factor analysis using a maximum likehood algorithm. The two-factor structure from the forced-choice format (Watson, 1981) and the four-factor structure from the likert format (Collins, 1974) were consistent with the data from the study. However, both solutions only accounted for approximately 20% of the variance. An oblique structure represented the data better, indicating the strong *intercorrelations* among the factors. The better fit of the oblique structure can be viewed as support for Rotter's conceptualization that locus of control is an unidimensional concept. On the question of formats, Ashkanasy, suggested that the likert format is better because of the non-comparability of the *I-E* scale alternatives.

Fleming & Spooner (1985) examined two scales of locus of control, those of Collins and Levenson, for their relationship with measures of adjustment.[11] Adjustment scales included measures of anxiety, self-esteem, masculinity-femininity, and attitudes towards women. When factor analyses were conducted using individual scale items from the scales of locus of control, five factors were found: difficult world, just world, predictable world, politically responsive world, and friendly world. There was considerable overlap between Collins' Belief in the Difficulty World and Levenson's Powerful Others ($r = .84$; $p < .001$). Some of Levenson's Chance items loaded on the Predictable World factor. Score on the Difficult World factor (high score indicates externality) seemed to be most related to the various measures of adjustment, with the following correlations: .38 with anxiety; -.30 with self-esteem; and .34 for attitude toward women.

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[11] Since the Collins's scale is really the *I-E* scale decoupled (alternatives rated separately), the study really used alternatives from the *I-E* scale and those from Levenson's scale.

Goodman & Waters (1987) examined the intercorrelations among five locus of control scales: *I-E*, Reid & Ware (1974), Levenson (1974), Nowicki-Strickland scale for adults (ANS-I/E) (1974), and Duttweiler's Internal Control Index (1984). A sample of 267 undergraduate students completed these scales. The following subscales were used in the analyses: Reid & Ware's Fatalism, Social System Control, and Self-Control; Levenson's Chance, Powerful Others, and Internal. Total score on the *I-E* was significantly correlated with Fatalism, Social System Control, ANS-I/E and Chance ($r = .55$; .45; .46; and .45 respectively). Levenson's Chance scale was correlated with Fatalism ($r = .46$) and with the ANS-I/E ($r = .46$). There seemed to be convergence among the fate or chance oriented scales. The Self-Control and Internal subscales seemed to be different from the rest.

Locus of Control: Conclusions and Implications

The Rotter's Internal-External Locus of Control Scale has been the impetus for research in the area of locus of control. Although widely criticized for its unidimensionality, attempts of others to develop different scales have not met with much better success. Some of the inherent difficulties seem to be conceptual; there are divergent views concerning the role of LOC in the prediction of behavior. Unlike self-esteem where there is considerable consensus regarding its role in mental health, the same question for LOC has not been definitively answered. Even the much accepted view of helplessness behaviors has been challenged. The relationship of the LOC construct with depression is most evident in the reformulated learned helplessness model of depression. Those individuals who make attributions about failure experiences to internal, stable, and global causes are most likely to become depressed. For Beck's model, the linkages are not as explicit. Assuming excessive responsibility or personal causality is identified as one of the common cognitive errors found in depressed individuals. However, Beck has not specified the relationship between locus of control and the etiology of depression.

Interrelationships: Depression, Self-Esteem, and Locus of Control

This section of the review deals with the concepts of depression, self-esteem, and locus of control through several different theories: the role of excuses; the relationships among excuse-making, locus of control, and depression; the relationship between deviant behaviors and low self-esteem; and the role of illusionary control and mental health. These linkages are presented below.

Theory of Excuse-Making

Snyder, Higgins, & Stucky (1983) hypothesize that individuals are motivated to use excuses in order to maintain a positive self-image. Their theory provides another dimension to the relationship between maintenance of healthy self-esteem and externality. Using the analogy of the actor in the theatre, they conceptualize three components to the self-image: the actor, the performance (behavior in a particular situation), and the audience (a combination of self and others). The self-image is "an actor's mental picture of his or her performance in a particular situation before an audience" (p. 28).

Excuses come into play when the actor's self-image is threatened by a poor performance that the actor feels responsible for the performance. That is, excuses are used to ward off *threats* to one's self-image. There are individual differences as to what is considered a threat. The evaluation of the performance is determined in part by: standards, internal and/or external, intentionality of the actor, and the perceived importance of the behavior towards the actor's overall self-concept. The determination of responsibility is based on three types of information: consensus, consistency, and distinctiveness. *Consensus* refers to how others in a similar situation would have behaved. *Consistency* refers to how the actor is seen to behave in similar situations over time. *Distinctiveness* refers to how different the current performance is when compared to performances in other situations. The actor is held most responsible when there is *low* consensus, *high* consistency, and *low* distinctiveness.

The activation of excuses, for the bad performance, decreases one's responsibility for the negative activity as well as lessen the perceived negativeness of the act. If the excuses work, they not only allow the actor to maintain the positive self-image but also allows the actor to "carry on" towards future performances.

Excuse-Making and Depression

Snyder *et al.* (1983) and Snyder & Higgins (1988) are not suggesting that excuse-making is necessarily adaptive or maladaptive. Rather, they hypothesize that motives to preserve a positive self-esteem are pervasive mediators of behavior. The crucial question is not whether someone makes excuses or not but what are the underlying reasons why one needs to use excuses. In fact, it is the lack of excuse-making, or the perceived lack of needing to protect self-esteem that may be maladaptive. In their review of the literature, Snyder & Higgins (1988) conclude that individuals with a depressive disorder have a attributional pattern that is *opposite* to those who tend to use excuses. These individuals tend to attribute failures to causes that are internal, stable, and global (ISG pattern) while those less depressed tend to attribute failures to causes that are external, variable, and specific (EVS pattern). They further suggested that someone who has a depressive disorder often do not take steps to protect his/her self-esteem. In fact, it may be this *inaction* that contribute in part toward the *maintenance* of the depressive disorder via the failure to protect the person's vulnerable self-esteem. However, that may be a strategy used to *forestall* further threats to the already fragile self-esteem by displaying helpless and self-punitive behaviors so that others will either help or at least make less demands on the person.

Tennen & Herzberger (1987) offered another aspect of the relationship between vulnerable self-esteem and depression. In a study of college undergraduates, they found that one's current level of self-esteem (score on the Self-Description Inventory) is a *better* predictor of one's attributional style (score on the Attributional Style Questionnaire) than is the current level of depression (score on the Beck Depression Inventory) when both variables are used in regression analysis. Even when depression score was deleted from the prediction model, the self-esteem score still significantly *predict* the depressive attributional style: internal attributions for failures and external attributions for successes. That is, the tendency to make internal attributions is characteristic of individuals with low self-esteem *independent* of the depression status. In methodological terms, self-esteem makes a significant contribution to attributional style independent of its *shared* variance with depression.

Tennen & Herzberger speculate that it is possible for someone to score in the moderately or even severely depressed range on the BDI *without* necessarily showing a negative view of the self or self-blame; features that are indicative of low self-esteem. These findings need to be replicated with clinically depressed populations. Causal modeling procedures are also needed to determine the causal priority of attributional style, depression, and self-esteem. As well, continuing research is needed about the relationship among depressive subtypes, self-esteem and attributional styles.

Excuse-Making and Externality

The relationship between excuse-making and externality is based on the dimension of responsibility. Snyder *et al.* (1983) assert that individuals that are external are more *sensitive* to negative feedback (than internals) and are more prone to activate excuses in order to protect and maintain their positive self-image. Furthermore, it is the *individual differences* in the locus of control that mediates the type of excuses used by externals: such as externalizing failures to outside reasons; preference for chance rather than skill activities; preference for tasks that have a build-in rationalization (Basgall & Snyder, 1988). All of these tend to minimize the individual's responsibility for the action or behavior. However, this argument can be turned around: the concept of excuse-making, and the need to make excuses, can be viewed as the *mediating* process for defining the behaviors of someone who has an external locus of control. Whatever is the case, the end result is that someone with an external locus will make *more* excuses when faced with failure than someone who is internal.

The more interesting point is the hypothesized relationship between externality, sensitivity to negative feedback and the *need* to maintain a positive self-esteem. It suggests that the positive self-esteem often seen in individuals that have an external locus of control may be the result of a sustained effort of *protection* of that self-image through the use of excuses against those performance that have been judged poor. Therefore, having a high or positive self-esteem may not *always* be equated with positive mental health but it may *hide* an overly sensitive self-image. The differentiating characteristic may be one of locus of control. That is, if someone has a positive self-esteem *and* an external locus of control, that person may need just as much help as someone with a less positive self-esteem.

Deviant Behavior and Self-Enhancement

Kaplan (1980) postulates a similar situation whereby a positive self-image is maintained through deviant behaviors in defense of a fragile self-image. The self-esteem motive is central to Kaplan's theory for deviant behavior. This postulate states that an individual is motivated to *maximize* one's positive self-attitudes and *minimize* one's negative self-attitudes through a variety of strategies.[14] This motive is presumed to be in place by the first months of life. The infant learns the associations between his/her behaviors, the actions/reactions of the surrounding adults, and the satisfaction/dissatisfaction of basic physical needs (eg, sleep, hunger). The infant comes to learn the behaviors which will elicit actions from adults that will bring satisfaction for his/her basic physical needs.

Using data from a 3-year longitudinal study of approximately 4,000 grade 7 students, Kaplan was able to show the prevalence and strength of the self-esteem motive in influencing behavior. Much of the data was collected through the use of a 209-item structured self-administered questionnaire. Self-attitudes were measured by score on a 7-tems self-derogation scale. Deviant behavior, covering a wide range of behaviors, was measured by a 28-item self-report scale. These were validated by observations from school personnel. Other measures include self-protective responses, self-devaluing circumstances, indicators of subjective distress, and endorsement of socially desirable self-descriptions.

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[14] This is similar to Snyder *et al.* (1983) postulate that excuse-making is motivated by the need to preserve one's self-esteem.

Kaplan asserts that as an individual experiences rejection from his/her identified group, the individual not only loses motivation to confirm to group norms but come to see seek behaviors that are *deviant* to these norms. In fact, deviant responses are the only alternative that might effectively serve to improve self-esteem. Deviant behaviors are reinforced by the reduction of self-rejecting attitudes and the enhancement of positive self-attitudes. With longitudinal data, Kaplan was able to show that the occurrence of deviant behaviors *preceded* the reduction in self-rejecting attitudes.

Excuse-Making, Negotiation of Reality, and Illusion of Control

There is converging evidence to suggest that positive mental health is correlated with the use of excuses for failure or poor performances and the maintenance of the illusion of control (Snyder & Higgins, 1988; Taylor & Brown, 1988). Snyder & Higgins found that the EVS pattern (external, variable, and specific causes) is a more *adaptive* attributional style for bad events in a variety of situations. Furthermore, treatment effects for depressed or anxious individuals are *most* effective when the treatment emphasize the teaching of externalizing attributions.

In a comprehensive review of the different aspects of what is considered positive mental health, Taylor & Brown (1988) concluded that an exaggerated or *illusionary* perception of reality rather than a more *accurate* perception is more correlated with the traditional conceptions of positive mental health. This is contrary to the widely held traditional position that a psychologically healthy person is one who maintains close contact with reality. *Less* accurate perceptions are found in three areas: assessment of strengths versus weaknesses; assessment of the sense of personal control; and assessment of the future. Normal individuals seem to be more aware of their strengths and assets and less aware of their weaknesses and faults. They also seem to overestimate their role in chance-determined events (such as gambling). They also hold overly optimistic and unrealistic views about the future. More *accurate* perceptions are associated with disorders such as depression.

Taylor & Brown further assert that these illusionary perceptions and positive illusions *contribute* to positive mental health. These perceptions are important for happiness/contentment; ability to care for others; and capacity for creative and productive work.

They summarize research in social cognition to show that positive illusions are achieved through information-processing strategies *biases* and *errors*. These are more apparent when threats to the self is increased; such as when the person is confronted with negative feedback. When negative feedback cannot be avoided, Taylor & Brown suggest that the individual may attempt to isolate them as much as possible from the rest of the self-concept. The inability or failure to do so may *result* in a depressive disorder.

Interrelationships: Conclusion and Implication

Although the relationships between depression and self-esteem, and depression and locus of control have been well documented in the clinical literature, the research cited in this section presents these relationships in a slightly different perspective. The research cited in this section represent a cross-fertilization of social cognition and clinical psychology. Although many of the relationships are the same (eg, depression and external locus of control), some of the processes or conceptualizations behind these conclusions are different (eg, externality and excuse-making and positive mental health).

Psychiatric Diagnosis and Classification

Classification is a basic activity in any scientific discipline. In order for knowledge to be accrued, one must have a system for ordering and sorting the elements of interest such that: researchers can be reasonably certain of what one is studying and others can replicate one's findings. Classification of psychopathology has struggled with the question of what models are most appropriate. The most common debate is the dimensional versus categorical models. Some of the research are presented next.

DSM-III

The publication of the DSM-III in 1980 signified a major change in the conceptualization and classification of mental disorders in the United States. There are three major advances of the DSM-III over its predecessor, DSM-II: diagnostic criteria, multiaxial system and the nonetiological, atheoretical, descriptive system (Spitzer, Williams & Skodol, 1980). These are presented next.

Diagnostic Criteria

A major conceptual difference between the DSM-III and the earlier editions is the use of diagnostic criteria. For each disorder and subtype, there is an accompanying list of criteria. The research base of these criteria can be traced back to work on the Research Diagnostic Criteria, which was derived from the work at the Washington University School of Medicine at St. Louis (or commonly called the Feighner criteria after the name of the senior author) (Spitzer, Endicott & Robbins, 1978). Some items on these lists are quite objective and easily observable; some are quite subjective and needs to be inferred. For example, one of the criteria for major depressive episode is a significant weight loss. This is relatively objective and easily observable. Another criteria for this disorder is the presence of a dysphoric mood, such as feeling sad, depressed, blue, low. This criteria is quite subjective and it requires an inference on either the clinician or the patient or both.

Nevertheless, the use of a list of symptoms or behaviors can improve the reliability of the diagnostic process. Although there can still be disagreements as to the interpretation of any of the items on the list (especially with those that require some inference), at least there is a common list. One of the major objections raised by the working committees responsible for the development of the DSM-III is the lack of diagnostic criteria of previous systems of classification psychiatric disorders (DSM-I, DSM-II). Although not strictly diagnostic criteria, the international counterpart of the DSM-III established by the World Health Organization, ICD-9 (International Classification of Diseases, 9th edition; WHO, 1978) does have a descriptive glossary where a general description is provided for each disorder. A more detailed comparison between the DSM-III and the ICD-9 is presented in another section.

Increased Differentiation

The accomplishments of the DSM-III needs to be viewed in light of its predecessor, DSM-II. That system had been in place for 12 years. There were relatively few number of diagnoses. The increased number in DSM-III is due to its greater differentiation of existing DSM-II disorders and inclusion of new disorders (APA, 1980). For example, there are 5 phobic disorders in DSM-III while there is only one in DSM-II (phobic neurosis). Similarly, there are 5 specific developmental disorders while there is only one in the DSM-II (specific learning disturbance). The DSM-III included a number of new disorders, for example: oppositional disorder, attention deficit disorder without hyperactivity, gender identity disorders and psychosexual dysfunctions.

The intent of the greater differentiation was to provide a more specific and useful system of classification for both clinical and research activities (APA, 1980). Studies comparing the DSM-II and DSM-III have found that DSM-III provided more differentiation and better coverage than DSM-II (Russell, Mattison & Cantwell, 1983; Mezzich & Mezzich, 1985).

Multiaxial System

The DSM-III has five axis. *Axis I* consists of the clinical syndromes (and the V-codes; conditions not attributable to a mental disorder that are a focus of attention or treatment). *Axis II* consists of personality disorders and specific developmental disorders. *Axis III* consists of those current physical disorders and conditions that are important towards either the etiology of the mental disorder or the overall management/treatment of the mental disorder.

Axis IV provides a 7-point rating scale for coding of the overall severity of a psychosocial stressor or stressors judged to be a significant contributor to the development or exacerbation of the current disorder. The following areas are considered for this assessment: conjugal (marital or nonmarital), parenting, other personal, occupational, living circumstances, financial, legal, developmental, physical illness or injury, other psychosocial stressors, and family factors (for children and adolescents). The rating is to be based on the impact of the stressor to an "average" individual rather than the subjective impact to the client in question.

Axis V codes the highest level of adaptive functioning during the past 12 months. Adaptive functioning is composed of functioning in three areas: social relations, occupational functioning, and the use of leisure time. A 7-point rating scale is also used for this axis.

The adoptation of a multiaxial system for the DSM-III follows a long history of such development in psychiatric diagnosis in the European research community (Williams, 1985a, 1985b). The multiaxial system formally acknowlegdes the complexity of etiology and the maintenance of mental disorders. Information from different domains are collected in order to understand and treat the mental disorders. The first two axes can be viewed as describing the psychological functioning; the third, biological conditions; and the fourth and fifth, social variables.

The separation of the clinical syndromes (Axis I) from personality disorders (Axis II) is explicitly done to ensure that other possible disorders in Axis II are not overshadowed by the more florid and perhaps more acute syndromes coded in Axis I. This change is consistent with the move of the DSM-III allowing the coding of multiple diagnoses for any one individual. That is, as long as the individual satisfies the diagnostic criteria of a particular disorder, that will be coded regardless if the person already have received another diagnosis. Whereas in the previous editions, the clinican is instructed to code only one disorder - the most important, most serious - the DSM-III allows the flexibility of multiple coding. This acknowledges the importance of and *enhances* the opportunity to research co-occurrences of different mental disorders.

This should not be confused with the hierachical organization of the DSM-III. That is, in the conceptualization of certain disorders, some are considered more encompassing and comprehensive than other. For example, organic mental disorders are more comprehensive than anxiety disorders even though some of the symptoms for organic mental disorders are the same as those for anxiety disorders. These situations are explicitly dealt with in the diagnostic criteria of the more circumscribed disorders (for example, see the diagnostic criteria for anxiety disorder, p. 225, DSM-III Manual; also see the Diagnostic Tree).

Atheoretical Approach

The explicit rationale for using atheoretical diagnostic criteria and to exclude etiological type criteria is to acknowledge that for most disorders there is no known etiology but many multiple hypotheses concerning the etiology, often arising from different disciplines. This approach seems to go beyond the area of diagnostic criteria to the exclusion of some well-know psychological constructs such as neurosis (Frances & Cooper, 1981). The guiding principle is that classification should be based on shared phenomenological characteristics rather than on underlying processes that have to be inferred. This atheoretical approach also excludes the role of systems theory in the etiology of disorders. Therefore, in an attempt to increase the acceptability of the DSM-III to diverse mental health disciplines, an atheoretical approach is adopted (Spitzer, Williams & Skodol, 1980).

Improvements in Reliability

As stated previously, one of the major objectives of the DSM-III is to improve the reliability of the diagnosis of mental disorders. The establishment of diagnostic criteria for each disorder is the major strategy. Several studies detailing reliability trials and the effects of training are reported below. Phase one of the field trials using a draft version of the DSM-III (January 15, 1978 draft, which is virtually identical to the final version), sponsored by the National Institute of Mental Health, consisted of a sample of 281 adults and 365 clinicians (Spitzer, Forman & Nee, 1979). In order to participate in the study, the clinicans must have used the DSM-III draft on at least 15 patients previously. Interrater reliability using the Kappa coefficient was calculated for either joint interview or separate interviews sessions based on agreement at the level of the *major* diagnostic classes. That is, agreement is defined as being in the same major class, such as schizophrenia, and disagreements as to the specific subtypes were ignored. The results showed that Kappa coefficients, using joint interviews, for major diagnostic classes of Axis I and Axis II (personality) disorders were .78 and .61, respectively. Kappa coefficients using separate interviews were generally lower. Kappa coefficient for affective disorders was .77.

The field trials study also investigated the reliability of Axes-IV and V (Spitzer & Forman, 1979). For Axis-IV, the Kappa coefficient was .62 from joint interviews, and .58 from separate interviews. For Axis-V, the Kappa coefficient was .80 from joint interviews and .69 from separate interviews. As can be seen, Axis-IV has only marginal reliability while Axis-V has good reliability.

A study of a 2.5-day training program for novice DSM-III users were conducted on 251 participants. The group was a mixture of psychologists (35%), social workers (18%), nurses (16%), physicians (12%) and other mental health workers (19%). The inclusion criteria for the group was some familarity with the diagnostic nomenclature in the DSM-II and an above-average knowledge of psychiatric disorders. The workshop consisted of a curriculum guide, a set of corresponding slides, and a videotape cassette with five practice case vignettes. Each participant was required to diagnose 3 of the cases. The case vignettes were simulations by actors based on real case materials. The overall agreement over the five cases of participant and expert ratings was 74.2%. The range was 56.2% for borderline personality disorder and 84.0% for schizophrenia, paranoid type. (The other diagnoses represented were major depression, single episode; childhood onset pervasive developmental disorder; and primary degenerative dementia, presenile type.) These results are generally consistent with the field trials.

Validity

The major push for the developers of the DSM-III has been to increase the reliability of the diagnostic process. The issue of validity of the diagnostic categories has not received as much attention. Although reliabilty is a necessary condition for validity, it is not sufficient by itself. That is, although two raters may show high degree of agreement as to what a disorder is, one has no information as to *what* exactly is being agreed upon. The issue of validity is particularly relevant when the number of diagnostic categories in the DSM-III has increased dramatically over its predecessors.

The developers themselves acknowledge that some of the new categories are included with only evidence for *face* validity. This is especially the case with the section in the DSM-III dealing with disorders in children (Spitzer & Cantwell, 1980). Their rationale is that other forms of validity need to be demonstrated and evidence can be accumulated when researchers begin to investigate these new disorders. They reasoned that clinicans would rather have a classification system for communication purposes now than to wait for one that is fully validated. When diagnostic categories are not verified through research, these can then be excluded from the system at a later date.

In summary, the DSM-III has three major accomplishments. The use of diagnostic criteria have greatly improved the inter-rater reliability of the diagnoses. The theoretical intentions of the multiaxial system: to acknowledge the complexity of disorders; the roles of stressors and psychosocial functioning in the understanding and treatment of disorders, are important milestones in the field of psychopathology. Finally, the deliberate avoidance of theoretical biases, mostly in reaction to psychoanalytic formulations of psychopathology, was intended to make the DSM-III more potentially appealing to a larger audience.

Critiques of the DSM-III

Criticisms of the DSM-III can be classified into three general areas: validity of the diagnoses, the overall theoretical question of classification of psychopathology by discrete categories, and specific concerns with the multiaxial system. One of the most common criticism is the proliferation of the number of possible diagnoses within the DSM-III system.

Validity-Related Critiques

Possibly in an effort to correct the old problem of not being sensitive to more mental problems and perhaps in an effort to include all possible types of mental health problems that might be encountered, the developers may have errored on the side of overinclusiveness. New disorders and subtypes of disorders were added to the DSM-III with little or no empirical research into their prevalence and their relationship to other existing disorders (Garfield, 1986).

This overinclusiveness have two major consequences. Overinclusiveness may not be a problem unless one considers the negative or social effects of labeling. Despite efforts to educate society, having a mental disorder is still considered a stigma (Garmezy, 1978). More importantly, overinclusiveness affects the reliability and validity of the diagnoses themselves. These impact negatively on further research and ultimately the deeper understanding of the disorders.

There are more specific criticisms concerning the validity of diagnoses. Quay (1986) criticized the diagnostic criteria on the ground that they have not been established through the use of empirical means, such as some form of statistical analysis to pinpoint exclusion and inclusion criteria. That type of procedure would consider the base rate, the costs of false positives and false negatives. His major argument is that the use of diagnostic criteria may confer validity to the criteria where *none* exist because the list has not been derived empirically. Thus, the inceased reliability the diagnosis does nothing to enhance validity.

A related issue to the establishment of the diagnostic criteria is the common procedure of using a specific number of symptoms as one of the diagnostic criteria for disorders. That is, to diagnose a particular disorder, one only has to check off the specified number of symptoms from a list of symptoms and signs. There are two problems with this procedure. One, the specific number of symptoms required has not been empirically derived. Two, this procedure implicitly *equates* the importance or relevance of *each* of the symptoms on the list (Stromgren, 1982). This adds to the overall "cookbookish" impression of the DSM-III as expressed by clinicans (Williams, Spitzer & Skodol, 1985; Valamoor, Waring, Fisman, Cernovsky, & Brownstone, 1989). In the same direction as the suggestion by Quay (1986), Roth (1982) also suggested the use of multivariate statistics such as factor analysis, discriminant function, and cluster analytic techniques to assign quantitative *weights* or scores proportionate to the diagnostic criteria's values in description and discrimination.

Classification-Related Critiques

The issue of classification is closely related to the construct validity of DSM-III diagnoses. Diagnoses, as conceptualized within the DSM-III system, are discrete categories. Others theorize that disorders or psychopathology are better conceptualized as dimensions (Eysenck, Wakefield, & Friedman, 1983). Still others consider psychiatric diagnosis should be considered as prototype categorization (Cantor, Smith, French, & Mezzich, 1980) or a hybrid model (Skinner, 1981). The following is a presentation of some of the theoretical issues of classification of psychopathology.

One of the strongest proponents of the dimensional approach to psychopathology is Eysenck. In a recent article critiquing the categorical approach of the DSM-III, Eysenck (1986) summarizes the research concerning his 3-dimensional model for behavior: psychoticism; neuroticism; and extraversion-introversion. He advocates that a 10-point rating system for each of these 3 dimensions is more accurate for the description of an individual than any categorical approach can be. Thus, a person will receive a 3-number code corresponding to the level of functioning under each of the 3 dimensions. (Athough he does agree that multiple diagnoses can be used to arrive at a similar description.) In addition to considering this type of conceptualization more accurate, Eysenck suggests that it is more *sensitive* to documenting changes/improvements with treatment, such as a decrease in the psychoticism and an increase in extraversion.

Others consider the DSM-III as a mixed model (Lorr, 1986; Skinner, 1981). Lorr summarizes the pros and cons of both the categorical and dimensional approaches. The pros of a categorical system is its simplicity for communication, conceptualization, and record-keeping. Its major limitation is loss of information. Not all disorders can be cleanly classified into *one* category. The pros of a dimensional approach is its ease for quantification and its sensitivity for capturing individual differences in the expression of an disorder. This feature also allows for a better system for measuring change or improvement. The cons about the dimensional approach is its validity for psychopathology. Unlike the categorical approach which has a relatively long history, the dimensional approach is a relatively recent conceptualization. Lorr considers that the DSM-III can be conceptualized as a mixed model. Although the DSM-III is primarily categorical, there are some crude quantitative criteria for some of the disorders. The push is for more quantification of the disorders so that a standardized syndrome profile can be generated. This approach will incorporate the best of both systems.

Skinner (1981; 1986) identifies four different structural models for describing relationships among psychiatric disorders: hierarchical, dimensional, categorical, and circumplex. An example of a hierarchical model is the division of affective disorder into primary and secondary; the primary can then be further divided into unipolar or bioplot; and the unipolar can be divided into depressive spectrum or pure depression. An example of a dimensional model is to classify depression with neurotic and psychotic at either ends of the dimension. An example of a categorical model for depression is to divide depression into different types: psychotic, neurotic, anxious, hostile and so on. Circumplex models conceptualize individual differences in continuous circular form. Skinner considers Galen's four temperments of sanguine, choleric, melancholic, and phlegmatic an example of a circumplex model.

Skinner considers the DSM-III as a hybrid model containing features of hierarchical, categorical and dimensional models. The categories of disorders in Axis I and II have an implicit hierarchical structure; Axis IV and V are examples of a dimensional view of psychosocial stressors and functioning. However, he suggests that a radax model may be more appropriate for the classification of psychopathology. This is a combination of circumplex and dimensional models. Basically, different aspects of a disorder are plotted on a multivector hyperspheroid. Each plane represents an clinical sign, eg., sleeplessness, hallucinations, psychomotor agitation. The length of the vector quantifies an individual's level for that particular clinical sign. Different disorders can be viewed as discrete areas within the hyperspheroid. Change in the status for the individual can be easily charted visually on the hyperspheroid. For example, a person initially classified as having a psychotic depression (with depressive and hallucinogenic features) may be classified as having a manic disorder when there has been drastic increase in the psychomotor agitation plane. The attractive features of this model is the potential use for quantifying change or course of a disorder and the acknowledgement that diagnosis is *not* static but can be dynamic and changing.

Cantor *et al.* (1980) and Cantor & Genero (1986) discuss the similarity of the processes of forming psychiatric diagnosis and that of natural categorization. Categorization involves two processes: similarity matching to decide what an instance is, and differentiation to decide what an instance is not. They note that natural categorization uses *fuzzy* categories. For example, the differentiation between "apple" and "pear" can be quite difficult. In the process of natural categorization, within-group similarities are exaggerated together with exaggeration of between-group differences. For the similarity matching, two types of models can be used: the use of a prototype and the use of an exemplar. *Prototypes* provide quick and easy guides to overlap between categories while *examplars* help to underscore the variability within categories. For the differentiating phase, the construction of contrast sets and plausible alternative sets are important.

In an experiment varying the typicality of a (psychiatric) case, Cantor *et al.* (1980) found that typical cases are diagnosed with more confidence and more accuracy than atypcial cases indicating that psychiatric diagnosis is similar to natural categorization. In a later experiment, they found that there is an interaction between the amount of experience and the use of models for diagnosing atypical cases. For novice diagnosticians, they felt more confidence when working with prototypes. However, for expert diagnosticians, they prefer to use examplars.

Cantor & Genero (1986) note that the DSM-III manual uses prototypes. There are only the occasional examplars. They recommend that revisions to the DSM-III manual should include more examplars. Since psychiatric diagnosis is similar to natural categorization, there will always be some patients that will *never* fit clearly into well-defined categories. They caution that revisions to the manual should not be too restrictive, that *real* variability within a dignostic category should not be viewed as *error* to be reduced by procedural and descriptive improvments to the manual.

Multiaxial System

The type of criticisms on the multiaxial system centres around the questions of the number of axes to be used and the type of information that should be coded. Rutter and Schaffer (1980) severly criticized the DSM-III for the inclusion of mental retardation as one of the clinical syndromes in the Axis I. They refuted the arguments that support the inclusion of mental retardation as a clinical syndrome. Two of their biggest objections are as follows.

One, while mental illness is defined in terms of a abnormal *type* of mental functioning, mental retardation is defined in terms of an abnormal *level* of mental functioning. Therefore these two should not be included in the same axis because of their conceptual difference. Two, empirical evidence show that if multiple diagnoses are required within the same axis, such as Axis I, the diagnoses are likely be less reliable. They favor the system in the ICD-9 where a *separate* axis is used and it focuses on an estimate of intelligence alone.[15]

Comparisons of ICD-9 and DSM-III

The ICD-9 is the other major classification system in place at the time of the DSM-III. Since their respsective publications, both systems have now newer editions (DSM-III-R: APA, 1987; a draft version of ICD-10: WHO, 1986). In Canada, there is no one official classification that is used. Rather there are three major systems: ICD-9, ICD-9-CM and DSM-III. [16]

The ICD system is substantially different from the DSM-III on several fronts. Unlike the DSM-III which deals exclusively with mental disorders, the ICD system is recognized by the United Nations as a system of classifying diseases of which mental disorders forms only part of that system. Its original purpose was to have a system of classification for statistical purposes, to gather *information* regarding the prevalence of different diseases worldwide. The development into a research, clinical care and teaching instrument necessarily strain its overall structure (Jablensky, 1988).

Comparisons between the ICD-9 and DSM-III have been limited to those parts that are common to both. The major research question centres around the relative superiority of either system in the diagnosis of mental disorders. These deal with issues of reliability, validity, the usefulness of the systems as well as the more theoretical implications of the systems on the nature of psychopathology.

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[15] Although there are criticisms of Axis IV and V of the DSM-III, since this study only dealt with Axis I and II, these criticisms will not be presented.

[16] ICD-9-CM is the clinical modification of the ICD-9 which is the official system for the classification of *diseases* in the United States.

In a comparison of the two systems as it pertains to children and adolescents, Werry (1985) noted that the two systems are more similar than different from each other. However, he did note six differences. *One*, although both uses a 5-axis system, they differ in terms of what are coded.[17] *Two*, personality disorders can be diagnosed in children with the ICD-9 while that is not possible in the DSM-III. *Three*, mental retardation is diagnosed on a separate axis and based on an estimate of intellectual level alone with the ICD-9 while in the DSM-III it is viewed as one of the clinical syndromes having both intellectual and social functioning criteria. *Four*, the DSM-III has far more number of subcategories within major diagnostic categories. *Five*, co-occurrence of disorders are dealt with by the use of multiple diagnoses in the DSM-III, a practice that is perhaps encouraged through the structure of the DSM-III. For the ICD-9, only some co-occurrences or mixed disorders are dealt with by *specific* categories. For situations where the specific combination is not present in the ICD-9, the clinican must decide which is the *predominant* disorder. *Six*, the DSM-III has diagnostic criteria for each disorder while the ICD-9 only has a general glossary. Of these six differences, the biggest differences are the issues of mental retardation, multiple diagnoses, and diagnostic criteria.

The following is a summary of two major studies on the reliability and validity of the ICD-9 for children and adolescents. The first one involved 52 British child psychiatrists and 28 case histories (abstracted from real cases) (Gould, Shaffer, Rutter, & Sturge, 1988). There were a total of 1456 possible diagnoses (28 cases x 52 raters). There were 7 major diagnostic categories used by the psychiatrists. The overall Kappa coefficient was .38, with a range of .17 to .67 and a median of .48. This level of agreement, although low, is consistent with the level obtained when the DSM-III was used on the same cases (Mezzich, Mezzich & Coffman, 1985). The three most common diagnoses were: neurotic disorders (23 cases); adjustment reaction (24 cases) and disturbance of emotions specific to childhood and adolescents (23 cases). These are also the ones with the poorest Kappa coefficients: .37, .23, and .17 respectively. The authors concluded that these categories had been used indiscriminately.

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[17] For the ICD-9, the axes are: clinical psychiatric syndrome, specific delays in development (a 7-point rating scale), intellectual level (10 categories), medical conditions and abnormal psychosocial situations (18 situations) (Rutter, 1977).

The issue of discriminant validity was investigated by comparing family situation and other demographic information on separate pairs of diagnostic categories. Some of the comparisons are at more global levels (3-digit code level), some are among subcategories (4-digit code). In general, discriminant validity was shown for global distinctions: emotional versus conduct disorder; emotional versus neurotic; hyperkinetic versus conduct disorders. The evidence for differentiation of subcategories was poor, for both subcategories of conduct disorders (socialized versus unsocialized) and for subcategories of emotional disorders (4 subgroups: anxious, depressed, withdrawal and relationship problems). The overall conclusion of the authors was as follows: given the current knowledge regarding childhood disorders, one should use only global categories.

A German study of the ICD-9 involving 21 child psychiatrists using the same 28 cases (translated to German) revealed similar results (Remschmidt, 1988). Percentage agreement rather than kappa coefficients were used. At the level of global level, the agreement was 62.2%; at the subcategory level, the agreement was 43.2%. For ratings of delay of development (Axis II), the agreement was 80.7%. The agreement for intellectual level was extremely high, with the majority of the cases with at least 90% agreement (23 out of 28 cases). The coding of abnormal psychosocial situation was quite difficult with resultant poor interrater agreement. Overall, these results are comparable to those of the British study.

Comorbidity

The issue of comorbidity has been an important issue in the area of psychopathology. Comorbidity affects classification issues (such as reliability and validity of individual diagnoses); and treatment planning. It ultimately affects the understanding of specific psychopathologies. In a discussion of the future direction of child psychiatric epidemiology, Rutter (1989) identified *comorbidity* or the occurrence of multiple diagnoses as one of the challenges of the discipline. Six patterns were identified: (1) conduct and hyperkinetic disorders; (2) conduct disorder and drug abuse; (3) depression and conduct disorder; (4) depression and anxiety; (5) depression and anorexia/bulimia nervosa; and (6) among different subtypes of anxiety disorders. Rutter offered several hypotheses for the occurrence of comorbidity:

1. Many disorders have mixed patterns of symptomatology.
2. Disorders have shared risk factors so that individuals are predisposed to several otherwise different psychiatric disorders at the same time.
3. The overlapping of risk factors, such as family discord and parental depression, leading to a comorbidity of conduct disorder and depression.
4. "True comorbidity": having one disorder increases the probability or risk of another.
5. One disorder is an early manifestation of another.
6. Incorrect conceptualization of diagnosis as categories; dimensional variables may be more appropriate.

(Rutter, 1989, p. 645)

Puig-Antich *et al.* (1989) working with prepubertal-onset depression suggested that the search for "pure" (ie, non-comorbid) forms of affective illness "may be a futile undertaking as comorbidity may be an intrinsic characteristic of children with major affective illness and their families as well." (p. 414). They suggested that the term "familial comorbidity" was probably more accurate.

For this study, the comorbidities of attention deficit disorders and behavioral disorders; of depression and anxiety; and of depression and behavioral disorders are particularly important. Some of the research findings are summarized below.

Attention Deficit and Behavioral Disorders

Working with a large nonreferred sample (n=315) of elementary school children, Shapiro & Garfinkel (1986) noted the interdependence of ***ADD*** and other disorders. They suggest that some of the diagnostic characteristics of ***ADD*** and ***CD*** are not specific to the individual disorders. Biederman and associates (Biederman, Munir, & Knee, 1987; Munir, Biederman, & Knee, 1987) noted that those diagnosed with ***ADD*** were also more likely to have other difficulties. Of the sample of 22 ***ADD*** patients, 21 (96%) had other DSM-III diagnoses; of these 21, 12 are behavioral diagnoses (***OPP*** and ***CD***). They had two conclusions. One, they suggested that ***ADD+OPP*** or ***ADD+CD*** may represent a distinct subcategory of ***ADD***. Two, clinicians should be aware of the complexities of patients presenting with ***ADD*** at treatment centres. Treatment plans should be sensitive to behavioral and affective disturbances in these patients.

Werry and associates were quite critical of the validity of the *ADD*, *CD*, and *OPP* diagnoses (Werry, Reeves, & Elkind, 1987; Reeves, Werry, Elkind, & Zametkin, 1987). They reviewed 100 studies investigating these disorders in children. Differences were categorized into: background, family/ecological, neurodevelopmental, personality and (other) behaviors, cognition, and achievement. They noted that most of the differences found were ones that distinguished them from *normal* children only. The few differences found were related to gender, age, and intelligence. For example, those with anxiety disorder tended to be older females, less socially and cognitively handicapped than those with *ADD* or *ADD+CD*. *ADD* and *ADD+CD* are quite similar (in gender ratio, age of onset, social and cognitive handicaps). The notable differences were: *ADD* had more perinatal insults and *ADD+CD* had more adverse family background.

A recent large survey of Ontario communities concluded that children diagnosed with *ADD* have distinguishable characteristics (Szatmari, Offord, & Boyle, 1989). Although the authors reported other psychiatric disorders beside *ADD*, only *one* specific comparison was significant was found between *ADD alone* (n=67) and *ADD+other* clinical disorders (n=80; *ADD+others* group had poorer interpersonal relationships). The majority of the comparisons made were between *ADD* (n=157) and *non-ADD* (n=2,544) children. Therefore, Werry's question of the diagnostic validity of *ADD* still stands.

Anxiety and Depressive Disorders

Aside from the co-morbidity of *ADD* and behavioral disorders, anxiety disorders are often found to co-exist with *MDD*. Many studies have discussed the relationship between anxiety and depression (MacDougall, & Brown, 1984; Breier, Charney, & Heninger, 1985; Stavrakaki, Vargo, Boodoosingh, & Roberts, 1987; Cohen, & Biederman, 1988). Part of this comorbidity is due to the overlapping of the respective symptomatology. Depressed individuals often display anxious behaviors while anxious individuals sometimes show depressed symptoms. Approaching the problem from a slightly different perspective, researchers investigated the co-morbidity of anxiety and depression in an unselected adult twin sample (3,798 pairs) using multivariate genetic analysis (Kendler, Heath, Martin, & Eaves, 1987).

The subjects completed self-report questionnaires on depression and anxiety. Results showed that genetic factors act largely in a nonspecific way on the overall level of psychiatric symptoms. Differences were found in the effect of environment: specific factor was found for depression and one for anxiety. The researchers concluded that the predominant role of genes is to *sensitize* an individual to environmental stressors, the exact form of the symptom - depression or anxiety - depends on the specific environment.

Behavioral and Depressive Disorders

The co-occurrence of *MDD* and *CD* has been well documented (Chiles, Miller, & Cox, 1980; Marriage, *et al.*, 1986; Jensen, Burke, & Garfinkel, 1988; Reich, 1985; Politano, Edinger, Nelson, 1989; Puig-Antich, 1982; Puig-Antich, *et al.*, 1989). The co-occurrence of these two disorders seem to result in more severe psychopathology. For example, Marriage *et al.* (1986) found that the *MDD+CD* group rated themselves more depressed on a self-report depression scale than those diagnosed with pure depression.

Politano *et al.* (1989) used a different approach for investigating depression in affective and behavioral groups. Total score on the *CDI* did not distinguish between the depressed and the conduct disordered group (both had means of 12.5). The researchers then used cluster analysis to look at patterns of the individuals within each group. They found that the depressed group had clusters dealing with sadness/isolation, negative self-image, and self-loathing (items 1,20,5,8,7,25). The conduct disordered group had clusters dealing with a defeated attitude, being upset, not having fun, wanting to be alone, and difficulty with academic performance (items 2,3,7,25,26,11,10,4,12,15,23). Politano *et al.* concluded that the negative findings are mostly due to the lack of variance of the *CDI* scale itself. The use of cluster analysis circumvented that problem. They also questioned whether children and adolescents have the affective vocabulary with which to express their subjective experiences - such as with the *CDI*.

Puig-Antich *et al.* (1989), using family history data about prepubertal depression, found that *MDD+CD* seems to have very little positive familial history (for other psychiatric disorders) while *MDD+psychotic* or *MDD+bipolar* disorders have significant positive history.

They suggested the following nosological continuum for classifying *MDD*: one end will have those that have a comorbid conduct disorders and the other end those with manifestations related to bipolarity, hypomania, mania, and psychotic subtypes. There is some evidence that although *CD* is less depressed as the *MDD* group, they may be at a higher suicide risk because they are more aggressive and impulsive (Apter, Bleich, Plutchick, Mendelsohn, & Tyano, 1988).

Psychiatric Classification and Diagnosis: Conclusions and Implications

The current classification system of psychopathology, the DSM-III, is a much improved system than its predecessors. The diagnostic criteria increased the reliability of specific categories; the multiaxial system acknowledges the multiple complexity of psychopathology. Many of the criticisms concern the *validity* of specific diagnostic categories and the *categorical* view of psychopathology. The structure of the DSM-III allows for the study of comorbidity, within certain hierarchical structures, through the mechanism of multiple diagnoses.

Research Questions, Issues, and Hypotheses

The major purpose of this study is to investigate the cognitive and emotional aspects of depression in adolescents: examining the relationship of depression to self-esteem and locus of control. As well, it is proposed that a *better* understanding of this phenomenon can be obtained by *comparing* this disorder to other disorders on these constructs. This type of comparison also has clinical utility as clients seeking help often present with a wide range of problems. The ability to discriminate different disorders based on their profiles on key psychological variables is important for diagnostic and treatment purposes.

This literature review presented a survey of research in four major areas: depression, self-concept and self-esteem, locus of control, and psychiatric diagnosis and classification. Based on the above proposal, a series of issues has been formulated and is presented below. Questions arising out of the issues can be divided into two major areas: (a) those dealing with group discriminability, and (b) those dealing with the suitability of the instrumentation used in the study.

The issues for the group discriminability questions are presented below. Although (individuals suffering from) depression can often be distinguished from the normal population, the distinction is more difficult when the comparator is other psychopathologies. The ability to accurately differentiate one disorder from another has not only theoretical but clinical relevance. More specifically, the group discriminability questions will address an issue deriving from Beck's theory of depression and Higgins's theorizing about self-discrepancy. According to these researchers, one of the factors that triggers and maintains a depressive episode is the large discrepancy between the individual's current view of self and his/her ideal self. The *Ident* and *Self Sat* scales on the *TSCS* can be viewed as proxy measures of current and ideal selves respectively.

Another group discriminability aspect is the question of gender differences. Are there any gender effects or interactions with diagnostic group? What is the effect of gender on the constructs measured? The last area of concern is the impact of chronicity of affective disturbance on self-esteem and locus of control. Leahy postulates that self-schemas acquired at a particular age carries with them cognitive limitations of that age. Similarly, the relationship of locus of control and mental health is not linear: the research seems to indicate that neither extreme internality nor externality are adaptive. The impact of traumatic events can be decreased when one attributes responsibility to the self. What is the adaptive process when one is faced with a depressive episode? The study attempts to investigate these issues by examining the relationship between recurring or long exposure to depression and one's self-esteem and locus of control. A subsidary analysis is the interrelationships of depressive symptomatology with self-esteem and locus of control for selected psychopathologies. The questions concerning group discriminability are summarized below:

1. **What are the profiles of the different diagnostic groups on scores of depression, self-esteem, and locus of control; are these profiles distinctive?**
2. **What are the accuracy rates for predicting diagnostic group membership using self-report data?**
3. **Are there any gender differences in the self-report data of the various diagnostic groups in the study? and**
4. **What are the relationships of the constructs of depression, self-esteem, and locus of control in selected psychopathological groups; what is the impact of the length of the mood**

disturbance in affective groups on these constructs?

The issues for instrumentation are presented below. The study uses the DSM-III diagnostic categories for group placement. Therefore, it is important to establish the (inter-rater) reliability of these diagnoses. Related to the question of reliability is the issue of multiple diagnoses. The DSM-III system allows for more than one diagnosis to be assigned to one person if all the diagnostic criteria are met. In very general terms, a person receiving two diagnoses is *assumed* to have more severe problems than someone else who only receives one diagnosis. This procedure was introduced partly to acknowledge the complexity of psychiatric disorders and to allow for the possibility of co-occurrence of different disorders. However, the allowance of more than one diagnoses for each person may introduce a certain imprecision to the diagnostic process. That is, instead of trying to really work through all the relevant information and arrive at a diagnosis by eliminating other competing diagnoses, the allowance of more than one diagnoses might lead the diagnostican to stop at the several competing diagnoses stage and to avoid singling out the most appropriate one. The primary purpose of this study is *not* so much as to study the disgnostic process but rather to determine the *legitimacy* of using only the *primary* diagnosis to determine placement into diagnostic groups for those cases that have more than one diagnoses.

The following are issues related to the self-report instruments used. The study of adolescence as a distinct group is a relatively recent phenomenon. Researchers are just beginning to develop clincial scales specific to this population. However, the specificity of these new scales must be balanced with their relative lack of research data concerning construct validity. The use of older, more established scales, has the advantage of having broader, and richer research databases. However, the use of these older scales, either developed for children or adults, must deal with the question of suitability for the adolescent group. None of the three scales used in this study is specifically designed for a clinical adolescent population although two of the scales have been used extensively in other clinical populations (the *CDI* and *TSCS*). The issue of suitability will be addressed through an investigation of internal consistency and factor structure of the scales used.

A final issue is a combination of instrumentation and discriminability concerns: the consequence of the close relationship between the constructs of depression and self-esteem. One of the problems that arises is whether one can obtain a pure measure of depression without measuring self-esteem and vise versa. This is a measurement problem in that all current measures of depression also contain items that measure self-esteem. The issues are: can the two concepts be measured independent of each other; and what is the specific impact of this conceptual overlap for this study? A series of cross-scale factor analyses is used to examine the extent to which items would load substantially on more than one scale. The purpose would be the removal of those items that showed substantial cross-loadings.

The questions concerning instrumentation suitability are summarized below:

1. **What is the inter-rater agreement on diagnostic categories; what is the appropriate estimate of this agreement?**
2. **What is the effect of multiple diagnoses on the measures used in this study; can the primary diagnosis be used for group placement?**
3. **Are the scales used suitable for this outpatient clinical adolescent population? and**
4. **What is the extent of the overlap in the constructs of low self-esteem and depression; how does that affect the self-report scales used in this study?**

Summary of Questions and Hypotheses

The following is the listing of the specific techniques or methodologies used to answer the questions concerning group discriminability and instrumentation suitability. If appropriate, the null and alternative hypotheses are also provided.

The following are questions relating to group discriminability:

1. Null Hypothesis: there would no difference in the profile of test scores from the different diagnostic groups.
   -- *Alternative Hypothesis*: there would a unique pattern of test scores for each of the diagnostic group.

2. Null Hypothesis: scores from the self-report instruments would not be able to predict diagnostic group membership in a discriminant analysis.
   -- *Alternative Hypothesis*: the test scores can be used to predict diagnostic group membership.

3. Null Hypothesis: there would be no difference in the pattern on the *TSCS* variables across the different diagnostic groups.
   -- *Alternative Hypothesis*: the *MDD* group should show the largest discrepancy between *Ident Self* and *Self Satis* Scales on the *TSCS*.

4. Null Hypothesis: there would be no gender effects on the test scores from the self-report instruments.
    - -- *Alternative Hypothesis*: there would be gender effects on the test scores.

5. Null Hypothesis: there would be no interaction between gender and diagnosis on any of the test scores.
    - -- *Alternative Hypothesis*: there would be interactive effects between gender and diagnosis on the test scores.

6. Null Hypothesis: for the affective groups, there would be no correlation among scores on depression, self esteem, and locus of control scales.
    - -- *Alternative Hypothesis*: there would be a negative correlation between depression and self esteem, and a positive correlation between length of depression and external locus of control.

The following are questions/issues concerning instrumentation suitability:

1. Inter-rater reliability of the Axis-I DSM-III diagnosis between intake worker and attending psychiatrist.

2. The effect of receiving multiple diagnoses on the test scores in the study. That is, can placement into diagnostic groups for individuals receiving more than one Axis-I diagnosis be based solely on the primary diagnosis?

3. Internal consistency of the self-report instruments used.

4. Factor analytic structure for each of these self-report instruments for the adolescent sample in this study.

5. Cross-scale factor analyses to determine items that load substantially on more than one scale.

Chapter III METHODS

Measures

Depression: Children's Depression Inventory

Kazdin, in a recent review of childhood depression (1990), listed 12 self-report inventories and 10 interview/rating scales designed to assess depression in children and adolescents. Only 8 of these 22 instruments were published before the 1980s. A similar survey by Kazdin & Petti (1982) reported only 13 items in total. The Children's Depression Inventory (*CDI*), one of the earliest and widely used scale, is a 27-item multiple choice self-report inventory designed to assess the severity of depressive symptomatology in the age range of 8 to 17 years. It is a modification of the Beck Depression Inventory (BDI; Kovacs & Beck, 1977). The scale covers a wide range of depressive symptoms including disturbances in mood and hedonic capacity, vegetative functions, self evaluations, and interpersonal behaviors (Kovacs, 1983). In addition, the scale includes several items specific to school-aged children. Each of the 27 items has three alternatives of increasing symptom severity scored '0' for absence and '2' for severe. The order of the alternatives are counterbalanced to avoid a response bias. Scores for the item alternatives are summed to yield a total score with a possible range of 0 to 54 with *high* score denoting *increasing* depressive symptomatology. Although the *CDI* has been subjected to factor analyses, the total score is the typical measure used in studies.

Since its release in 1977, the *CDI* has become one of the most widely used and well-researched self-report measure for depression in children and adolescents (Kazdin, 1990). It has a reading difficulty level of approximately grade 3 (Berndt, 1983). The *CDI* has good psychometric properties. Kovacs (1983) and Saylor, Finch, Spirito, & Bennett (1984) report strong internal consistency (Cronbach's alpha greater than 0.80s; split half in the 0.70s), and strong test-retest reliability (9 to 13 weeks: $r = .72$ to .84, 1 week: $r = .87$; 6 weeks: $r = .59$). Norms have been established by age and gender (Finch, Saylor, & Edwards, 1984; Smucker, Craighead, Craighead, Green, 1986; Nelson, Politano, Finch, Wendel, & Maryhall, 1987; Doerfler, Felner, Rowlison, Raley, & Evans, 1988).

Studies of validity deal with convergent, discriminant, and construct validity. Kovacs (1983) reported the following evidence of validity: *CDI* score showed no correlation with a measure of general distress; *CDI* scores were higher for depressed versus normal or other clinical samples; *CDI* scores change (decrease) parallel clinical improvement. Children with extreme scores on the *CDI* (19 and above) were significantly different from those with low scores (5 or lower) (Strauss, Forehand, Frame, & Smith, 1984). The high group showed poorer self-concept, felt more anxious. They were also rated by teachers as more anxious, less attentive, and showed poorer academic performance. Peer ratings showed this group to be less physically attractive, less smart, and overall less liked by the class.

The *CDI* was shown to be more accurate in identifying depressed children and adolescents from a large normal sample than the CES-D (Doerfler *et al.*, 1988). Using the cutoff score of 19 on the *CDI* and 16 on the CES-D (as recommended by the authors of the respective instruments), of those identified by the *CDI* (as depressed), 86% were also similarly identified by the CES-D. On the other hand, only 19% of the sample identified by the CES-D was similarly identified by the *CDI*. The cutoff of 19 on the *CDI* identified approximately 10% of the sample as depressed - while the CES-D identified some 46% of the sample as depressed. The prevalence rate for a normal sample is much closer to 10% than to 46% (Kovacs, 1983; Smucker *et al.*, 1986; Nelson *et al.*, 1987; Worchel, Nolan, & Willson, 1987).

Using the DSM-III as the criterion measure for depression for a sample of outpatient prepubertal children, Lobovits & Handal (1985) found that although the cutoff of 19 for the *CDI* was only able to identify correctly identified 84% as either depressed or not depressed, only 46% of children identified using DSM-III criteria was similarly chosen. The best combination seemed to be to lower the cutoff score to 12 but at the same time to double weight five *CDI* items that were concerned with dysphoria. This improved the overall accuracy rate to 92% and 92% of DSM-III depressed identified.

Saylor and his colleagues (Saylor *et al.*, 1984; Saylor, Finch, & McIntosh, 1988) have found that although *CDI* scores were generally higher for clinical versus normal samples, differences among depressed versus other clinical non-depressed samples were not significant.

They concluded that the construct validity of *CDI* still needs to be investigated more closely; diagnosis of depression should not be based on CDI score *alone*.

Contrary to the findings of Saylor and his team, Knight, Hensley, & Waters (1988) found that *CDI* discriminated among clinical samples. Working with prepubertal children in three inpatient units, three groups were formed based on DSM-III diagnosis and therapist ratings: affective diagnoses (ie, major depressive disorder, dysthymic disorder, atypical depression) (group=*depressed*), non-affective diagnoses but has depressed rating by therapist (group=*sad/not depressed*), and non-affective diagnoses and a nondepressed rating (group=*not sad/not depressed*). The depressed group had significantly higher mean *CDI* scores than both the other groups (19.5 versus 10.2 versus 7.0). Score for the *sad/not depressed* group was not different from that of the *not sad/not depressed* group.

The *CDI* has good discriminant validity between depressed and normal samples. Those identified as depressed showed other signs of depression: such as poor self-esteem. The discriminant power of the *CDI* for depression from other clinical samples is not as strong: the depressed groups generally have higher *CDI* scores than other clinical groups, but often the difference is *not* significant. However, this may not be a question of discriminability. Various clinical samples may well have some depressive *symptoms*. The solution of differentially weighting major dysphoric items (Lobovits & Handel, 1985) may yield better results.

Self-Esteem: Tennessee Self Concept Scale

The Tennessee Self Concept Scale (*TSCS*) is a 100-item self-report 5-point likert scale measuring different components of self-concept (Fitts, 1965). Of the 100 items, only 90 are concerned with self-concept, the other 10 items consists of items from the Lie scale of the MMPI (Minnesota Multiphasic Personality Inventory). The scale is counterbalanced for positively and negatively stated statements. Negative items are reversed keyed so that overall *high* scores denote *positive* self-concept. Fitts conceptualized the 90 items in two frames of reference: internal, with 3 domains, or external, with 5 domains. This 3 x 5 classification was validated by consensus among seven clinical psychologists.

The 3 domains for the internal frame of reference are: identity, self satisfaction, and behavior. Each domain contains 30 items, balanced for positive and negative statements. The 5 domains for the external frame of reference are: physical self, moral-ethical self, personal self, family self, and social self. Each domain contains 18 items balanced for positive and negative statements. Only scales ***within*** either the internal or external frames of reference have ***mutually exclusive*** items. Aside from generating scale scores for each of the individual domains, the scores from all 90 items are also summed to yield a Total Positive Score. There are also a series of empirically derived clinical scales plus other validity scales. In total, 22 different scores are possible using the *TSCS* (Fitts, 1965). The proliferation of scale scores has been a major criticism of the *TSCS*.

The subscales of interest in this study are only the ones from the internal frame of reference. The use of only mutually exclusive scales avoid the criticism of scale proliferation. The Identity Self (*Ident Self*)scale purports to measure the person's views about his/her present or current self (eg, "I am a friendly person."). In the distinctions made by self theory, the Ident Self measures the ***self-as-object*** aspect. The Behavioral Self (***Behav Self***) scale measures behavioral characteristics of an individual (eg, "I take good care of myself physically."). This measures the ***self-as-doer*** aspect. The Self Satisfaction (***Self Sat***) scale measures how the individual ***evaluate*** him/herself (eg, "I am satisfied to be just what I am."). This measures the ***self-as-observer and judge*** aspect. Although all three scales contribute toward a global measure of one's self-concept, the ***Self Sat*** scale in particular provides a more direct and specific measure of one's level of ***self-esteem***. Low satisfaction tends to generate poor self-esteem while high satisfaction tends to free the self and focus one's energy outward.

All scores on the *TSCS* can be converted to T-scores and plotted on the profile sheet provided. T-scores have a mean of 50 and a standard deviation of 10. Since the *TSCS* is scaled in the positive direction, T-scores of below 30 denotes scores of -2 standard deviations below the mean of the normative sample. The T-scores are based on a standardization group of 626 individuals with a age range from 12 to 68. Although Fitts had originally concluded that age did not have an effect on the TSCS, in a later publication (Thompson, 1972) separate norms were provided for the following age groups: junior high, high school, college students, adults, and seniors.

Fitts reported acceptable psychometric properties for the *TSCS*. Test-retest reliability (2 weeks) for the total score was .92 and coefficients ranged from .80 to .91 for the 8 major subscales. For validity evidence, in addition to the manual (Fitts, 1965), Fitts referred to the *Studies on the Self Concept and Rehabilitation* monograph series detailing studies in many diverse situations and groups.[11] Fitts (1965) reported numerous studies that examined the relationships of the *TSCS* and other personality measures (eg. the MMPI, The Taylor Manifest Anxiety Scale, the Edwards Personal Preference Schedule).

Wylie (1979) was critical of the *TSCS*. The major criticism was the *nonindependence* of the subscales - both due to actual item overlap and high interscale correlations of nonoverlapping scales. She used this nonindependence to argue that the extensive focus of the possible uses of the 22 scores and the analysis of profile differences was not justified.

Factor analytic studies have yielded mixed results regarding the construct validities of the *TSCS* subscales. Part of this is due to the differences in the samples used and others are due to the different conceptualizations of the factor structures. Bolton (1976) analyzed responses from a group of clients (n=312) from a rehabilitation centre. A series of factor analyses (using principal axis and oblimin rotations)were performed in order to test a number of hypotheses. The most relevant ones for this study were those testing the dimensionality of the internal and external frames of reference. When a three-factor solution was imposed on the data, the first factor contained mostly items from the *Ident* and *Behav* scales (18 and 13 respectively). The second factor contained equal number of items from the *Self Sat* and *Behav* Scales (13 and 12 respectively). The third factor contained a majority of *Self Sat* items only (13). The following results were obtained when a five-factor solution was imposed: (1) both *Social* and *Moral-Ethical* scales (8 and 7 respectively); (2) both *Personal* and *Moral-Ethical* (6 and 5 respectively); (3) only *Moral-Ethical* (5 items); (4) only *Family* scale

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[11] The series contained the following: I. The self concept and delinquency (Fitts & Hamner, 1969); II. Interpersonal competence: the wheel model (Fitts, 1970); III. The self concept and self-actualization (Fitts *et al.*, 1971); IV. The self concept and psychopathology (Fitts, 1972a); V. The self concept and performance (Fitts, 1972b); VI. Correlates of the self concept (Thompson, 1972); and VII. The self concept and behavior: overview and supplement (Fitts, 1972c).

(9 items); and (5) only ***Physical*** (6 items).

Boyle & Larson (1981) reported results from 255 disabled veterans from a medical facility. Eighteen factors were extracted (principal component, varimax rotation) but only eight were interpretable (Factor V contained only items for the Lie scale). Focusing on item loadings of .40 or more, the ***Self Sat*** scale was prominent for factors I and III. Factor II contained essentially ***Ident*** scale items. The ***Behav*** scale items was prominent for Factor VIII plus it has minor loadings on Factor I (loadings of .30 to .39).

Working with a large sample of 743 adults enrolled at the university (age range from 20 to 63 years), Hoffman & Gellen (1983) found 9 factors (plus one for the Lie scale items) using principal component and varimax rotation. Focusing on item loadings of .40 or more, the following patterns were apparent. Factor I contained mainly ***Ident*** items; factor II, and V contained a mixture of ***Ident*** and ***Behav*** items; factor III contained a mixture of all three scale items; factor VI, VII, and IX contained mostly ***Self Sat*** items; factor VIII contained ***Behav*** items. The data was refactored: separate factor analyses were preformed for the 18 items for each of the five external dimensions and the 30 items for each of the three internal dimensions (Gellen & Hoffman, 1984). The ***Ident*** scale was unidimensional yielding only one factor while both the ***Self Sat*** and ***Behav*** scales yielded multiple factors (3 and 2 respectively).

Using confirmatory factor analytic techniques, Marsh & Richards (1988) examined the factor structure of the ***TSCS*** with a group of 343 participants in a Outward Bound Program in Australia. Based on the conceptualization of Fitts (1965), the ***TSCS*** is composed of 3 different facets: internal, external, and positive/negative (according to the wording of the items). All possible combinations of these facets were tested. Of the eight possible different models, the best fit was one that postulated 3 internal, 5 external, and 2 positive/negative dimensions.

Locus of Control: Rotter's I-E Scale

The Rotter Internal-External Locus of Control scale (*I-E*) scale is a 29-item forced-choice self-report scale measuring an individual's locus of control (Rotter, 1966). Based on Rotter's theory about the locus of control construct, each item consists of two statements, one expressing an *internal* belief, the other expressing an *external* belief. The scale is scored for externality, with scores ranging from 0 to 23 with high scores denoting externality.[19]

The scale was based on a 26-item likert scale by Phares (1957) designed to measure locus of control. Initial scale development included subscales for different areas: achievement, affection, and general social and political attitudes. This intermediate scale contained 100 items in a forced-choice format (to control for correlations with social desirability). This was reduced to 60 items through a series of item and factor analyses. However, problems with high subscale correlations and correlations with social desirability of the achievement items resulted in the elimination of most of the specific achievement and affection items. The final version contained 23 items with 6 filler items.

Unlike the other two measures, *CDI* and *TSCS*, the development, use, and critiques of the *I-E* scale are very much tied to the theorizing of the locus of control construct itself. Much of the literature regarding the construct has been presented in the review of that construct (Chapter Two) and will not be repeated here.

Rotter (1965) reported the following psychometric properties. The majority of the data was based on testing of university or college students. Internal consistency estimates ranged from .65 to .73; test-retest reliability estimates ranged from .72 to .78 for 1-month interval and .55 for 2-month interval. Scores on the *I-E* were not correlated with measures of intelligence: ranging from -.09 to -.11. There was some correlation with social desirability, ranging from -.12 to -.29.[20]

Norms, expressed as the percentage of the sample obtaining a particular score on the *I-E*, was provided separately for males and females. They are based on a sample of approximately 1200 college students. The respective means and standard deviations were 8.15±3.88 (males) and 8.42±4.06 (females). Rotter reported means (combined male and female data) from other studies ranging from 5.94 (peace corps trainees) to 9.56 (sample of

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[19] The scale has 6 filler items, therefore only 23 items are directly related to the locus of control measure.

[20] A study with prisoners showed a much higher correlation of -.41. Rotter hypothesized since the mean score was more internal than the norms, the prisoners were in fact faking good.

18 year olds) with a median value (of the means) of 8.29. The standard deviations were in the range of 3.36 to 4.10.

Procedure

Consecutive adolescent referrals to the Diagnostic Unit of the Children and Adolescent Services (CASE) for a period of 14 months between 1986 and 1987. Adolescent referrals were those whose ages ranged from 12 years 0 months to 17 years 11 months.

CASE is a multidisciplinary outpatient treatment centre for both children and adolescents. The Diagnostic Unit is responsible for the initial telephone intake, the administration of a battery of psychometric tests, a diagnostic interview and a written assessment report for all adolescent referrals. This report contains, among other pertinent information regarding presenting problems, a full 5-axis DSM-III diagnosis. Each case that reached the stage of the diagnostic interview was also interviewed by the staff psychiatrist, generating a psychiatric assessment report. This psychiatric assessment also contains diagnoses on the first 3 axes of the DSM-III.

The information retrieved from each case consisted of DSM-III diagnosis from both the intake worker and from the psychiatrist, as well as gender and age. There was no contact between any of the subjects and the experimenter as the all the information was relayed through the Diagnostic Unit.

For those cases where there was a primary diagnosis of either Major Depressive Disorder or Dysthymia Disorder, two extra variables were also retrieved. These were: the current length of the depressive or dysthymic episode, and the lifetime total of the same. For example, the assessment report for case X showed that the adolescent had received a diagnosis of Major Depression and was reported to be showing these symptoms for 4 months before being referred. The report also stated that there was a previous episode 2 years ago that lasted for approximately 1 month. For this case, the length of the current episode would be 4 months and the lifetime total would be 5 months.

As well as information from the assessment reports, psychometric data for three different tests were also retrieved for each case. These were: the Children's Depression Scale

(*CDI*), the I-E scale for locus of control (*I-E*), and the Tennessee Self Concept Scale (*TSCS*). For all three tests, both the individual item response and the total scores were obtained for each case.

During the 14 months of data collection, 265 subjects completed the psychometric testing. Of these, 51 cases were excluded. The actual breakdown of these were as follows. Twenty-six did not receive a DSM-III diagnosis because they did not return for the diagnostic interview. Six cases were excluded because the severity of their psychiatric disturbance made the administration of self-report instruments impossible or invalid. Nineteen cases were excluded because of invalid or incomplete responding on one or more of the instruments. This reduced the sample to 214 cases. Of these 214 cases, 26 did not contain a psychiatric assessment report on file. However, these were not excluded because there was sufficient information on diagnosis to proceed.

During the course of the data collection, the intake interview (and the subsequent written report) was rotated through one of ten different intake workers. The psychiatric evaluation was rotated through one of four different psychiatrists.

DSM-III diagnoses were coded from both the intake report and the psychiatric evaluation. The following coding criteria were set up to deal with multiple diagnoses and differentials. For Axis-I, a maximum of *three* diagnoses were coded as well as *two* differentials. For Axis-II, a maximum of *two* were coded plus *one* differential. Diagnostic group *assignment* were based on the *primary* (first) Axis-I diagnosis. When the primary DSM-III diagnosis between the intake report and the psychiatric evaluation was different, the psychiatric evaluation took prescident. For the twenty-six cases which had only the intake report, group assignment was based on the information from the intake report.

Subject Demographics

Tables 1 and 2 present the gender and age distributions of the 214 cases. Approximately 60% of the cases was male. The mean age 14.7 years. Table 3 presents the frequency of diagnoses in the sample.[21] As can be seen, the affective disorders, major depressive disorder (*MDD*) and dysthymia (*DYS*), predominated the sample with 42.5% of cases. Behavioral disorders, conduct disorders (*CD*) and oppositional disorders (*OPP*), consisted of 24% of cases. Attentional deficit disorders (*ADD*) and V-codes (*VC*) consisted of another 11% of cases. The above diagnostic groups, consisting of 78% of cases (166 out of 214), are the focus of the majority of analyses. Table 4 presents the distribution of the number of cases by diagnostic groups. For example, 33 (or 56%) of *MDD* cases have only one diagnosis while only 4 (or 31%) of *ADD* cases have one diagnosis.

Insert Table 1 about here

Insert Table 2 about here

Insert Table 3 about here

Insert Table 4 about here

Treatment of the Data

This section deals with the general manipulation of the data prior to the different analyses of the data. Some of the treatment was specific to a particular scale; some were applied to the entire data set.

Several scores were derived from the *I-E* data. This is in accordance with Tyler *et al.* (1979) conceptualization of the *I-E* scale in terms of self and world attribution of locus of control. (Please refer to Appendix B for listing of the different subscale items.) For the world attribution, the external alternatives are classified into either ***passive agents*** (PAG) or ***victims*** (VIC). For the self attribution, the external alternatives are classified into either ***powerful others*** (PO) or ***noncontrollable*** (NC). Two items were deleted from this series of calculation: items 16 and 20 because they were altered and not classified respectively. As well as generating the component scores for each perspective: PAG or VIC (for self) and PO or NC (for world), proportion scores for these were also calculated. (For example: prop PAG = ((PAG/(PAG+VIC))*100.) This allows for the comparison of the ***relative*** contribution to the total score of each of the components. For example, both person A and B had a ***PAG*** score of 6. However, person A had a total ***I-E*** score of 12 while person B had a total score of only 6. The ***prop PAG*** for person A would be 50% while the ***prop PAG*** for person B would be 100%. In summary, aside from the global score for externality, 8 additional scores were derived from the ***I-E*** scale: PAG, VIC, PO, NC, prop PAG, prop VIC, prop PO, and prop NC. Since they are ***not*** independent scores, only ***subsets*** are used in any one analysis.

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[21] Please refer to Tables A1 and A2 for the cross-reference between actual DSM-III diagnosis and final diagnostic categories used in the study.

For the profile analysis, all the psychometric data involved were given a z-transformation based on the entire sample of 214. That is, for each variable separately, the difference between each individual's score and the mean of the entire sample was calculated and the difference was then divided by the standard deviation of the entire sample for that variable. The transformation resulted in the ***mean*** of the sample (n=214) for each variable to be fixed at 0, with a ***standard deviation*** of 1. Each individual's score is then expressed as deviations from this new sample mean. This was necessitated because profile analysis requires that all the measures in the profile to be of the same ***metric*** or unit of measurement. After this transformation, the metric (or unit of measurement) became ***deviations*** from the entire sample. The analyses then focused on the ***differences*** in the extent and direction of ***deviations*** from the sample mean of each of the specific diagnostic group.

For the scales from the ***TSCS***, no specific transformation was performed. Rather, two forms of scores were included in the analyses: ***non-transformed*** raw scores and ***T-scores***. The T-scores are similar to the z-transformed scores used in the profile analysis in that they are also deviation scores. ***T-scores*** have a mean of 50 and a standard deviation of 10. The distribution, however, is the normative sample from the ***TSCS*** rather than the sample from the study. Thus the T-scores denote the amount of ***deviation*** each individual has when compared to the normative sample on the particular scale of the *TSCS*. The use of raw scores as well as T-scores provided some protection against the possible ***inappropriateness*** of the standardization sample of the *TSCS* in comparison to the outpatient adolescent population of this study which would then render the T-scores ***invalid***.

Comparison Group

This section addresses the issue of the use of a comparison group in this study. The primary focus of this study are the affective and behavioral disorders: *MDD*, *DYS*, *CD*, and *OPP*. The use of a comparison group, if chosen appropriately, could enhance the ***discriminative power*** of the variables in the study to describe the individual groups. It could also increase the conceptual understanding of the disorders in question. A first approximation would be to form the comparison group from the *rest* of the sample. However, this would introduce unnecessary *variability* into the analysis because of the number of diverse disorders that would be included. Instead, two different comparison groups were chosen from the rest of the sample: *ADD* and *VC*.

The choice of these two groups have both theoretical and clinical significance. *ADD* is one of the prevalent disorders in children and adolescents. It is also often found to co-exist with the affective and behavioral disorders. Its inclusion will help to illuminate the similarities and differences of this to the other groups. The *VC* group is an interesting group within the context of this study because a diagnosis of V-code denotes that there is only a condition that should be a focus of treatment but not a mental disorder. This serves as a form of clinical control. To the extent that these two groups can be discriminated from the other major disorders would be of both theoretical and clinical importance.

Chapter IV RESULTS

The major purpose of this study is to conduct a thorough investigation of the cognitive and emotional aspects of depression in adolescence: examining the relationship of depression to self-esteem and locus of control. It is proposed that a *better* understanding of depression can be achieved by comparing depression with other forms of psychopathologies. The questions are summarized below: (1) what are the profiles of the different diagnostic groups on scores of depression, self-esteem, and locus of control; are these profiles distinctive? (2) what are the accuracy rates for predicting diagnostic group membership using self-report data (of the above constructs)? (3) are there any gender differences in the self-report data of the various diagnostic groups in the study? and (4) what are the relationships of the constructs of depression, self-esteem, and locus of control in selected psychopathological groups; what is the impact of the length of the mood disturbance in affective groups on these constructs?

In addition to the above major focus, several measurement-related issues need to be addressed because they impact on the reliability and validity of the diagnostic classification and self-report measures used. They are summarized below: (1) what is the inter-rater agreement on diagnostic categories; what is the appropriate estimate of this agreement? (2) what is the effect of multiple diagnoses on the measures used in this study; can the primary diagnosis be used for group placement? and (3) what is the extent of the overlap in the constructs of low self-esteem and depression; how does that affect the self-report scales used in this study? The findings are organized into the following three parts.

Part One addresses issues pertaining to the instrumentation used in the study: DSM-III, *CDI*, *I-E*, and *TSCS*. For the DSM-III, two issues are examined: (a) inter-rater reliability between the psychiatrist and intake worker, (b) the impact of multiple diagnoses on diagnostic group assignment (ie, cases placed into different groups based on their primary DSM-III diagnosis). For the self-report scales, two issues are examined: (a) the suitability of the scales for a clinical adolescent population (based on internal consistency and factor structure data), (b) the independence in measurement of depression and self-esteem (based on cross-scaled factor analyses).

Part Two addresses the issues of group discriminability. The following analytic techniques were used: (a) profile analyses, (b) discriminant function analyses, and (c) univariate analyses of diagnostic group and gender differences.

Part Three examines the interrelationships among depression, self-esteem, and locus of control through a series of correlations. Specifically, the impact of the duration of the mood disturbance in the affective groups on the measures of self-esteem and locus of control was examined.

Part One: INSTRUMENTATION - DSM-III

A. Inter-rater Reliability on DSM-III Diagnostic Categories

Inter-rater reliability for DSM-III diagnosis was considered in three different ways: kappa, weighted kappa, and a modified rating scale. *Kappa* is the measure of agreement for nominal variables corrected for chance agreement (Cohen, 1960). Whereas agreement is defined as a perfect match in kappa, weighted kappa allows for partial matches (Cohen, 1968). Each match/mismatch is given a weight to reflect the relative degree of agreement. (In general terms, kappa is a special case of weighted kappa when all mismatches are given the same weight.) For example, when calculating kappa, a mismatch of major depression as attention deficit is counted the same as a mismatch of major depression as dysthymia. However, *weighted kappa* allows the researcher to give a higher rating of *disagreement* to the mismatch between depression and attention deficit. The weighting system ideally should be based on knowledge derived from the literature. Whether or not this increased precision results in an improved kappa estimate depends on the appropriateness of the weighting system. A decreased kappa might mean that the weighting system had *failed* to capture the underlying relationship among the different categories being matched.

However, kappa cannot accommodate multiple or hierarchical diagnoses. Although weighted kappa has the potential to do that, the number of new categories needed to accommodate the various combinations and the assignment of weights (to each combination) precludes this alternative. Thus, a modified rating system was designed to attempt to measure inter-reliability of this sort. The system is described below.

A coding scheme was first established based on the primary DSM-III Axis-I diagnosis (see Appendix A, Table A1). That is, each diagnosis was assigned a numerical value. For each case, the following maximum limits were placed on the *number* of diagnoses coded from each report: *3* for Axis-I diagnoses; *2* for Axis-I differentials; *2* for Axis-II diagnoses; and *1* for Axis-II differentials.

A rating scale was then devised to measure degree of agreement of the DSM-III diagnosis between the intake worker and the psychiatrist (see Table 4). Since the psychiatrists involved in the study generally had more experience in diagnosis using the DSM-III system, that was used as the point of reference. The files were first divided according to the number of Axis-I diagnosis based on the psychiatric evaluation. There were 98 cases with one Axis-I diagnosis; 75 with two; and 15 with three for a total of 188 cases (since 26 cases did not receive a DSM-III diagnosis by the psychiatrist, these were *excluded* from the analysis).

Insert Table 5 about here

As can be seen in Table 5, scale points 1 to 3 definitely fall in the similar match category. In fact, given the complex nature of psychiatric diagnosis, a scale point up to 6 could be called *agreement*. A detailed scale of this kind allows the researcher to choose from a range of agreement criteria depending on the nature of the research questions. The application of this rating system for diagnoses in this study is presented following the Kappa calculations.

Kappa Coefficients on Six Major DSM-III Diagnoses

For this calculation, only the first or primary diagnosis was considered. In order to minimize the number of categories in the comparison, only six major categories were used: *MDD*, *DYS*, *CD*, *OPP*, *ADD*, and *V-codes*. This resulted in the inclusion of 140 cases (out of the possible 188). The overall *kappa* coefficient was 0.688. This level is considered good. The breakdown for the individual categories is presented in Table 6. Thus, based on these categories, one can conclude that there is reasonably good agreement between the raters on the more common DSM-III diagnoses. The fair agreement for *DYS* is in accordance with the literature describing the conceptual ambiguities of this diagnostic category.

Insert Table 6 about here

Psychiatric Versus Intake Worker Agreement - The Application of the Rating Scale

All cases with both a psychiatric and intake worker diagnosis were rated. The breakdown of the cases by rating is presented in Table 7.

The 10-point scale was then collapsed into 4 categories: (a)*excellent* agreement (points 1,2,3); (b)*good* agreement (points 4,5,6); (c)*poor* agreement (points 7,8); and (d)*no* agreement (points 9,10). As can be seen, approximately 70% of cases had good to excellent agreement. There was also a significant relationship between the rating and the number of diagnoses for each case (*Chi Square*=16.22, $df=6$; $p=.013$). There were significantly fewer cases receiving the excellent rating for the cases with three diagnoses (20% versus 50% for both of 1 and 2-diagnoses cases). This is not surprising as the number of diagnoses received for a case is related to its complexity.

Insert Table 7 about here

The same analysis was repeated using the same cases as for the kappa coefficient calculation. There is generally better agreement with this subset of diagnostic categories: 83% had *good* to *excellent* agreement. There is no longer a significant relationship between rating and the number of diagnoses received per case (*Chi Square*=9.43; $df=6$; $p=.15$). This suggests that for these major categories, there is generally good agreement between raters regardless of the relative complexity of the cases. This is encouraging because the majority of the analyses in this study would be based on these major categories.

In summary, the inter-rater agreement for the major diagnoses used in this study is good. The rating scale results are consistent with those from the more traditional *Kappa* calculations. It shows promise as a method for dealing with inter-rater-agreement based on a graduated system.

B. The Effect of Multiple Diagnoses on Group Placement

This section addresses the issue of multiple diagnoses. As stated previously, the primary aim of studying the effect of multiple diagnoses (on the dependent variables) was to determine the *legitimacy* of using only the primary diagnosis to determine group placement in cases with more than one Axis-I diagnosis. Within this scope, three issues were addressed. *One*, at the global level, does the number of diagnoses received (single versus multiple) have any effect on the variables in the study? *Two*, at a more specific level, the same question is asked within each major diagnostic category. Lastly, diagnostic group differences on the major variables were examined *excluding* cases with multiple diagnoses.

For the first question, the cases were grouped into single, double, and triple diagnoses. A series of one-way analysis of variance (ANOVAs) was used for all the variables in the study with the number of diagnoses as the between subject factor. This was followed by post-hoc Scheffe tests for those variables that showed a significant main effect for group (ie, for the number of diagnoses). As well, double and triple diagnoses were combined into one group and compared to the single diagnosis group (using *t*-tests). These results are presented in Appendix C (Tables C1 to C12).

For the analysis based on the number of diagnosis as the between group factor, there were only significant differences for the locus of control variables (see Table C1). There was an overall group effect for the global *I-E* score ($p = .043$) with the triple group scoring the least external of the three groups. Post-hoc Scheffe test did *not* reveal any specific significant group differences. There was also an overall effect for the *NC* subscale on the *I-E* scale ($p = .012$) with the triple group endorsing the least number of *NC* items. As with the global score, post-hoc analysis did *not* reveal any specific significant group differences.

Similar findings were obtained when the comparisons were reduced to single versus multiple diagnoses (see Table C2). The multiple group scored significantly more internal on the global *I-E*; and less *PAG* and *NC* items on the respective subscales. These findings are difficult to interpret because the level of analysis is so general (i.e., number of diagnoses). However, if one assumes that the number of diagnoses received is *indicative* of the level of psychiatric disturbance, these findings would suggest that internality is positively related to the level of disturbance.

The effect of multiple diagnoses within each diagnostic category are presented next. Table 8 shows the pattern of primary and secondary diagnoses for the six major diagnostic groups. For this series of analyses, cases with multiple diagnoses were only included *if* the secondary diagnoses were among the six major categories. The total number of cases with single diagnosis for the six categories was 87 while the number with multiple diagnoses was 65. Thus 43% of cases had multiple diagnoses. (This is comparable to the ratio in entire sample where 48% of the cases have more than one Axis-I diagnosis.) The prevalence rate of secondary diagnoses varied considerably among the six major diagnostic groups. The highest rate was within the *ADD* group (67%) while the lowest rate was for the *VC* group (18%).

Insert Table 8 about here

Within each diagnostic category, the effect of specific secondary diagnoses on the variables of interest were examined by forming subgroups for each specific secondary diagnosis. For example, within the *MDD* category, those with a secondary diagnosis of *CD* were separated from those with one of *OPP* and those with one of *VC*. Those with no secondary diagnosis also formed a subgroup of their own. For each diagnostic category, a series of ANOVAs was conducted on the psychometric data as the dependent variables (Tables C3 to C12).

Overall, there was *no* significant effect of specific secondary diagnostic categories with one exception. For the *CD* category, there was a main effect on the *Self Sat* scale of the *TSCS* ($p=.03$) (Table C7). However, post-hoc scheffe testing did *not* reveal any specific group differences. Thus, generally, the individual subgroups did not differ on any of the variables in the study.

Following the procedure with the first question, the effect of single versus multiple diagnoses within each diagnostic category was also examined through a series of two sample *t*-tests. On the whole, the results were similar to those from the ANOVAs. There were significant differences for the *CD* and *ADD* categories. Within the *CD* category, the *CD-only* group scored higher than the *CD+others* group on the Total Positive score and the *Self Sat* scale of the *TSCS* ($p=.045$; and $p=.003$ respectively) (Table C8). Within the *ADD* category, the *ADD-only* group scored lower than the *ADD+others* on the *Behav* scale of the *TSCS* ($p=.045$) (see Table C11).

Because diagnostic categories are theoretically different syndromes, a investigation of the effect of multiple diagnoses may be more fruitful if cases with same diagnoses, but reversed order, were compared. That is, how does a case with a primary diagnosis of *CD* and secondary diagnosis of *MDD* compare to one with these diagnoses reversed? As well, how do these compare with cases with a single *CD* or *MDD* diagnosis. The sample only contained enough cases for two such sets of comparisons: *CD+MDD*, and *CD+ADD*. For the *CD+MDD* analysis, four groups were formed: *CD+MDD* (n=2), *MDD+CD* (n=8), *MDD* single(n=35), *CD* single (n=18). ANOVAs revealed significant group differences only for the *TSCS* variables: *Total Positive*, *Self Sat* and *Behav Self* (see Table C14). Furthermore, post-hoc testing revealed that these differences were primarily due to the differences between the *CD-single* and *MDD-single* groups. The only one difference for the multiple diagnosis group was found in the *Self Sat* scale where the *MDD+CD* group scored lower than the *CD* single group.

The results from the *CD+ADD* analysis were similar (see Table C13). The four groups in the comparison were: *CD+ADD* (n=4), *ADD+CD* (n=2), *CD* single (n=18) and *ADD* single (n=4). There was one significant overall group effect: *Behav Self* of the *TSCS*. Post-hoc testing revealed the effect was due to the *CD-single* group scoring higher than the *ADD-single* group. There were no significant differences found for either of the multiple diagnoses on any other variable.

Finally, the last question deals with the effect of using only cases with single diagnosis. There were overall significant group differences for all of the three major concepts in the study: depression, self concept and locus of control. Post-hoc comparisons showed that the *MDD* group was more depressed than the *CD* group. The *MDD* group also scored lower on the *Total Positive* score than the *CD* group and lower on the *Self Sat* scale of the *TSCS* than both the *CD* and *VC* groups. There was also an overall main effect for the *Behav Self* scale of the *TSCS*. However, post-hoc analysis did *not* reveal any specific group differences. Lastly, the *MDD* group endorsed more proportionally more *PAG* items than the *VC* group. These results were essentially the same as results from the analyses using the entire unselected sample (to be presented in the section on Univariate Analyses).

In summary, both methods of investigating the effect of multiple diagnosis revealed few significant findings. Significant group differences were due to differences among single-diagnosis cases (rather than those with multiple ones). Furthermore, the results from using cases only with a single diagnosis were very similar to those with the unselected sample. These findings suggest that the impact of multiple diagnoses is *minimal* on the self-report scales used in this study. Therefore, it can be concluded that it *is* legitimate to use only the primary diagnosis for group placement for those cases with more than one Axis-I diagnoses.

Part One: INSTRUMENTATION - SELF-REPORT SCALES -

A. Suitability of Self-Report Scales for an Adolescent Population - Internal Consistency

The internal consistency of the three scales were investigated by calculating the alpha coefficient for the *TSCS* and *CDI* and the Kuder-Richardson (KR-20) coefficient for the *I-E*. The alpha coefficient (or the KR-20) sets an upper limit to the reliability of a scale. That is, all other forms of reliability estimates would yield lower figures. The alpha coefficients are shown in Table 9. Overall, the *TSCS* scale had the highest coefficient (.921) while the *I-E* scale had the lowest (.550).

Insert Table 9 about here

For the *CDI* scale, the coefficient of .879 was consistent with findings reported by Kovacs and others (ranges from .71 to .87). The mean and median item-to-total correlation were .437 and .454 respectively. Kovacs obtained comparable values (.41 for both) from a clinical sample.

For the *I-E* scale, the coefficient of .550 was lower than ones reported by Rotter in his monograph (ranging from .65 to .79). However, 3 of the 4 studies used university students while the fourth one used normal adolescents. None of the studies used a clinical sample. Franklin (1969) reported internal consistency of .69 based on a sample of 1000 senior high students. The mean and median item-to-total correlation for this clinical sample were .171 and .184 respectively. Those reported by Rutter, based on a sample of 400 college students, were higher: .256 and .260 respectively.

For the *TSCS*, no data on internal consistency were provided by Fitts. However, test-retest reliability for the total score was .92 with subscale score reliabilities ranging from .80 to .91. Alpha coefficients for these data should yield values higher than the test-retest reliabilities. The total score, the *Ident* Scale, the *Self Satis* Scale, and the *Physical* Scale all showed alpha's that are comparable with the test-retest data (alpha ranged from .81 to .92). Alpha coefficients for the other subscales (ranging from .68 to .80) are slightly lower than their respective test-retest reliabilities. Item-to-total correlations were calculated for the three internal scales. The mean and median values for the *Ident* Scale were .381 and .418 respectively. The mean and median values for the *Self Satis* Scale were .372 and .352 respectively. The mean and median values for the *Behav* Scale were .310 and .318 respectively.

In summary, these findings indicate that both the *CDI* and *TSCS* scales are suitable for use with a clinical adolescent population. The internal consistency coefficients are similar to those reported by the developers of the respective scales. The *I-E* scale, however, has weaker internal consistency data, suggesting that it is only marginally suitable for this population.

B. Suitability of Self-Report Scales for an Adolescent Population - Factor Analyses

All three scales were subjected to factor analysis in order to determine the structure of these instruments for an adolescent clinical population. Two different extraction methods were used: principal axis and principal component. For principal axis analysis, the square multiple correlations were used as the initial communality estimates. For principal component analysis, the initial communality estimate was set at one. Principal component analysis attempts to explain variance in the data while principal axis attempts to find common elements in the data. The cutoff criterion for the initial number of factors extracted was eigenvalues greater than one.

The detailed presentation of the analyses and interpretation can be found in Appendix D. All three scales produced *interpretable* factor structures that are consistent with those found in the literature. Therefore, it is concluded that the scales are suitable for an outpatient adolescent population. Consistent with the Cronbach's alpha results, the overall percentage of variance accounted for by the factors for the *I-E* scale is smaller than those for the *CDI* or *TSCS* scales.

C. Independence of the Measures for Depression, Self-Esteem, and Locus of Control

The issue to be explored here have arisen out of a theoretical consideration of a general question whereby if two variables show a substantial inter-correlation, should one not entertain the possibility that perhaps only *one*, and not two distinct underlying concepts are being measured. That is, the high inter-correlation may be the result of measuring the *same* underlying concept with two different variables. (There are other alternative explanations; for example, the correlation could be due to the two variables' relationship to a *third* variable.)

For this study, the question applies to the variables measuring *depression* and *low* self-esteem. Measures of depression and self-esteem typically show a negative correlation of the magnitude of -.50. That is, the higher the level of depression, the lower the self-esteem. Certainly one of the defining features of depression is low self esteem and thus measures depression and self-esteem should correlate - although it might be in a curvilinear manner. To relate this back to the original issue, the question is whether or not there is really only one concept - for instance depression - and that a measure of low self-esteem is really *another* measure for depression.

There are many ways to resolve that issue. One of them is to find cases that show *independence* of the two concepts. That is, can one find cases whereby there is low self-esteem without signs of depressive illness and visa versa. However, this creates a measurement type problem because the current scales for depression *all* contain questions to do with self-esteem. The question arises as to whether one can obtain pure measures of each concept without being *contaminated* by the other. That is, can one obtain a measure on depression without measuring self-esteem at the same time? An seemingly obvious solution would be to *remove* those items that seem to measure self-esteem from the depression scales. However, without resorting to a long drawn out procedure of restandardization of the scales, one is faced with trying to identify and eliminate items based *solely* on face validity.

One possible remedy is to subject the two scales to factor analysis. This would provide a *statistical* rationale for identifying any cross-over items; that is, items from one scale loading on the other. If there were no cross-overs, it would suggest that items within one scale have more in common among themselves than with items from another scale. Although this would *not* provide a *definitive* answer to the issue of whether or not depression and low self-esteem are the *same* thing, a situation of no cross-overs would at least allow for *relative* independence of the *measurement* of the two concepts.

This method was used to investigate not only possible cross-over items between depression and self-esteem but also of these concepts with locus of control. Thus, four factor analyses were performed: *CDI+TSCS+I-E*; *CDI+TSCS*, *CDI+I-E*, and *TSCS+I-E*. The results are presented in Tables 10 through 13 (see also Appendix D, Tables D4 to D7).

For the three-scaled analysis, there was remarkably little evidence of cross-overs (Table 10). All solutions (three, or five, or seven factor) revealed *CDI* as an intact scale with a minimum of 17 items out of the possible 23 loading on the same factor. The multi-dimensional feature of the *TSCS* was maintained, with the maximum of five factors extracted in the seven-factor solution. The *I-E* scale appears to be relatively heterogeneous in that only three items showed any substantial loadings in the last factor of the seven-factor solution.

Insert Table 10 about here

A similar pattern of results were obtained when the factor analysis was performed with *CDI* and *TSCS* items revealing relative independence between the two scales (Table 11). Even at the level of the seven-factor solution, there were only three *CDI* items that cross-overed. When the two scales were individually examined with the *I-E* scale, there was only one incidence of cross-over (of the *I-E* scale on the *CDI* scale) (see Table 12).

Insert Table 11 about here

Insert Table 12 about here

Insert Table 13 about here

In summary, this series of factor analysis revealed that the three scales used: *CDI*, *TSCS*, *I-E* are relatively ***independent*** of each other. That is, each would seem to measure different concepts within the outpatient adolescent population. Therefore, although there is substantial correlation between the score on the *CDI* and the scores on the *TSCS*, at the level of ***individual*** scale items, there is relatively no measurable relationship.

Part Two: GROUP DISCRIMINABILITY BASED ON MEASURES OF DEPRESSION, SELF-ESTEEM, AND LOCUS OF CONTROL

A. Profile Analyses - Differentiation of Diagnostic Groups Using Self-Report Data

Profile analysis was used to investigate group differences. Profile analysis is a multivariate technique that allows for the ***simultaneous*** comparison of two or more variables across two or more groups. Profile analysis produces four tests of significance which are analogous to the univariate analysis of variance. Profile analysis provides an overall test of significance plus tests for ***parallelism***, ***levels***, and ***variable*** differences.

For this study, a significant test for ***parallelism*** would mean that there is an ***interaction*** between the self-report measures and the diagnostic groups. That is, the ***pattern*** of test scores across the different diagnostic groups is ***significantly*** different. A significant test for ***levels*** would mean that the overall means (summed across all the self-report measures) of each of the diagnostic groups are different. In this study, a significant test for the ***variable*** effect would not be relevant.

In order to perform profile analysis, three conditions must be satisfied. *One*, the variables that make up the profile must have the *same* unit of measurement. *Two*, there must *not* be linear dependencies among the variables. That is, no one variable can be generated from a *linear* combination of the rest. *Three*, there must be a conceptual rationale to view these variables together in a profile. More common uses of profile analysis are investigation of group and profile differences on scales from personality inventories or subtests from a battery of achievement tests.

The major advantage for using profile analysis in this study is that one can utilize the information from *all* the major dependent measures - including information about differences in profiles. The decision to use this analysis created a methodological problem as only 3 out of the 5 variables, the *TSCS* variables, were measured in the same metric. This was solved by performing a *z*-score transformation on the 5 variables based on the entire sample. This procedure not only assured that all 5 variables in the profile were measured in the same metric, but also provided a conceptual rationale for looking at the 5 variables simultaneously in a profile. This transformation meant that the analysis would be focused on the extent and direction of each group's *deviation* on these variables with regards to the entire sample.

Three sets of four different profile analyses were performed on the data. The different sets are comprised of either 4 or 5 or 6 diagnostic groups (see Appendix E, Table E1 for a display of means and standard deviations from the various scores). The use of different combinations of groups allow the investigation of the relative discriminability of different diagnostic groups. The first set consisted of only affective and behavioral disorders: *MDD*, *DYS*, *CD*, *OPP*. This set compares the affective and behavioral groups. The second set included the addition of the group *ADD*. The addition of ADD not only allow for the examination of the profile for ADD, it also examins how that profile compares to those of the affective and behavioral groups. For example, does the *ADD* group have features of both groups or a pattern unique to its own? The third set consisted of the further addition of *VC* to the second set. The same type of questions are asked of the *VC* group as for the *ADD* group.

For each set, four different profile analyses were performed (see Tables E2 to E4) based on the type of scores used: two using z-scores; one using non-transformed raw scores, and one using T-sores (for the *TSCS* variables). The first was performed on all five z-transformed scores. This provided the most comprehensive analysis, generating a profile that would reveal patterns of ***deviations*** among the measures of depression, locus of control, and self-esteem. The remaining three analyses examine only *TSCS* variables while ***varying*** the unit of measurement: z-transformed scores, T-scores, or nontransformed raw scores. The use of z-scores still addresses the question of patterns of deviations. The use of non-transformed raw scores allows the investigation of absolute profile differences (as opposed to relative differences in the case of z-scores). The use of T-scores adds a normative component. These analyses with the *TSCS* variables provide both a test of Beck's prediction with regards discrepancy between *Ident Self* and *Self Sat* Scales as well as an examination of which is the best measure for revealing this prediction. A specific test of the prediction necessitated the use of a univariate ANOVA on the computed difference between the two subscales of the *TSCS*.

The Five-Variable Analyses: Maximum Use of all Self-Report Measures

There was a significant overall effect for all sets. In addition the test of ***parallelism*** was also significant for ***all*** sets. This meant that all groups showed ***different*** patterns of deviations for the variables measuring depression, self concept, and locus of control. Since all three sets (ie., 4 or 5 or 6 diagnostic groups in the analysis) yielded identical results, the different ***combinations*** of diagnostic groups did not affect the ***outcome*** of any of the significance tests. That is, all tests were significant regardless of the number or type of groups involved. The profile of each diagnostic group would be described followed by an interpretation of the significant findings (see Table E1 and Figures 1 to 3).

Insert Figure 1 about here

Insert Figure 2 about here

Insert Figure 3 about here

The group that showed the least amount of deviations from the sample mean was the *DVS* group. The mean z-scores for all five variables were virtually zero.

The other affective group, *MDD*, showed quite a different profile. Aside from the *I-E* score, which showed little deviation from the sample mean, all other scores showed deviations in the expected direction. The mean deviation on the *CDI* of +0.52 was the highest among the six groups. All the *TSCS* variables showed negative deviations ranging from -0.23 for *Ident Self* to -0.42 for *Self Sat* Scales. These were the most *negative* among the six diagnostic groups. This meant that the *MDD* group had endorsed the least amount of *positive* statements about their current view of self, their behaviors, and most of all their sense of self satisfaction about themselves - their self-esteem.

The two behavioral groups, *CD* and *OPP*, showed virtually *identical* pattern of deviations. Both showed a mean negative deviation on the *CDI* in the same *magnitude* as the *MDD* group but in the *opposite* direction. That is, both behavioral groups scored much less depressed on the *CDI* than the rest of the sample. The *CD* group showed a slightly more negative deviation on the *I-E* score as compared to the *OPP* group (-0.16 versus -0.09). Both groups showed a positive deviation on all three *TSCS* variables with the largest deviation on the *Self Sat* Scale. That indicates the behavioral groups had a much higher sense of self satisfaction relative to their *Ident* or *Behav* Selves.

The *ADD* group showed a unique pattern of deviations. The group had the second highest negative deviation on the *CDI*. That is, the group had the second lowest score on the *CDI* (relative to the sample mean) of the six groups. However, it had the highest positive deviation on the *I-E*. That is, the *ADD* group scored the most external among the six groups. This group also had the highest positive deviation on the *Ident Self*. That is, the *ADD* group had endorsed the most number of positive *Ident Self* statements on the *TSCS* relative to the six groups. However, this can be contrasted with a large negative deviation on the *Behav Self*. Finally, the *ADD* group showed little deviation from the sample mean on the *Self Sat* Scale. This constellation on the *TSCS* variables was *unique* among the six diagnostic groups examined.

The *VC* group, like the *DYS* group, showed little deviation on both the *CDI* and *I-E*. This group showed a similar pattern on the *TSCS* variables as the behavioral groups: all positive deviations with the *Self Sat* Scale showing much higher positive deviation. In fact, the group showed the highest positive deviation on the *Self Sat* Scale. That is, the *VC* group had the highest number of positive *Self Sat* statements endorsed relative to the other groups.

The relative contribution to the significant effects would be considered next. Since all groups had virtually the same *I-E* score, this variable likely did *not* contribute to the overall significant effect. In terms of unique group patterns, the *DYS* group was the least distinct of the six groups. It had scored very close to the sample mean on all the five variables (that is, z-scores of close to 0). The *VC*, *CD* and *OPP* groups all showed very similar profile of deviations with the *CD* and *OPP* groups having almost identical pattern. On the other hand, the profile for the *MDD* group was quite different from the behavioral groups and the *VC* group. This likely contributed to both the significant tests of *parallelism* and *levels*. As well, the unique pattern of the *ADD* group also contributed towards the significant effects.

In summary, all groups with the exception of the *DYS* had distinct profiles based on measures of depression, self-esteem, and locus of control. Of the three major constructs, the locus of control (*I-E* scale) showed the least amount of variability among the six diagnostic groups (see Figure 1). The significant interaction effect is due to the differences in profile among the *MDD*, *CD+OPP*, *ADD*, and *VC* groups. The *MDD* has the most severe profile; showing the largest deviations, in the pathological direction, from the overall sample means. The behavioral groups, *CD* and *OPP*, had identical profiles; they were the least severe. The *VC* was more similar to the behavioral groups than to *MDD*. The *ADD* had both affective and behavioral group features. The use of z-scores made possible the examination of profile differences based on both measures of depression *and* aspects of self-concept. This contributes to the overall understanding of the nature of the cognitive and emotional disturbances of the various diagnostic groups.

The Three-Variable Analyses: Self-Concept Scales

The three-variable analyses focus only on the *TSCS* or self-concept variables. Unlike the five-variable analyses, the ***number*** of groups being compared (ie. 4, 5, or 6) did have an effect on the pattern of significant results. As well, there were also different pattern of results due to the different units of measurement (ie, z-score, non-transformed raw scores, or T-scores). Thus, the results would be presented by unit of measurement.

Since the analysis using z-scores represents a subset of the overall five-variable analyses, the description of the profile for the different groups would not be repeated. For the z-score analyses, there was still an overall significant effect for all three sets (ie, varying the number of groups in the comparison). The ***parallelism*** test was only significant for the 6-group set. This would indicate it was the ***inclusion*** of the *VC* group that resulted in a significant interaction between the *TSCS* variables and diagnostic groups. However, the pattern of results were opposite for the ***levels*** test. While at the 4-group set (ie, the two affective and the two behavioral groups), the ***levels*** test was highly significant, this decreased when the *ADD* group was added. Finally, when the *VC* group was also added, the ***levels*** test was no longer significant. The pattern of results is due to the fact that the *ADD* group's pattern of ***deviations*** resembled that of the *MDD* while the *VC* group resembled that of the behavioral groups. The successive additions of these two groups ***obscured*** the initial differences between the affective and behavioral groups.

The results from the analyses using non-transformed raw scores would be presented next. A description of the profile for each group would be presented first. Of the six groups, the *MDD* group had the lowest scores on all three *TSCS* variables. More specifically, both the *Self Sat* and *Behav Self* Scales had very similar scores, and were considerably lower than the *Ident Self* Scale. The *DYS* group showed the similar pattern as the *MDD*, however, the means were higher for all three variables. The behavioral groups, *CD* and *OPP*, had virtually the same scores on the three variables. These two groups had the second highest scores on these variables among the six groups. The score on the *Ident Self* Scale was considerably higher than that of the *Self Sat* Scale which in turn was higher than that of the *Behav Self* Scale. The *ADD* group profile was similar to that of the affective groups for the *Ident Self* and *Self Sat* Scales. However, unlike the affective groups, the *Behav Self* Scale was considerably lower than the both the *Ident Self* and *Self Sat* Scales. Finally, the *VC* group had the overall highest scores on all three Scales. It showed a pattern that is quite different from the other groups. Unlike the large difference between the *Self Sat* Scale and the *Ident* Scale evident for all the other five groups, the difference for the *VC* group was virtually zero.

The significant results would be addressed next. As with the z-score analyses, there was an overall test of significance for all three sets (ie, significant regardless of the number of groups being compared). The results from the *parallelism* test was similar in that the 4-group analysis was *not* significant. However, both the 5 and 6-group analyses were significant. These results indicate that the significant difference in the pattern (that is, the significant test of *parallelism*) is due to the large difference between the *Self Sat* and *Behav Self* Scales of the *ADD* group, and the lack of difference between the *Ident Self* and *Self Sat* Scales of the *VC* group. All three sets showed a significant *levels* test. This result complement those from the z-score analyses. Whereas there was an absolute overall mean difference among the six groups on the *TSCS* variables, the analysis of profiles (as in the z-score analyses) show some of them to be the same.

The results of the T-score analyses would be presented next. To reiterate, these T-scores were based on the norms from the standardization sample provided by the *TSCS*. Visual inspection revealed that the pattern of T-scores for the six diagnostic groups to be the *same* (see Figure 3). All groups scored considerably higher on the *Self Sat* Scale than the other two Scales. The median score, across all six groups, for the three Scales were: 34.69, 47.10, and 34.25 respectively. The significant results would be summarized next. As with the other units of measurements, there was a significant overall effect for all sets. As expected, the test of *parallelism* or pattern differences was *not* significant for all sets. There was however significant *levels* test for all sets. This indicated that although there was no difference in the pattern on the *TSCS*, the diagnostic groups did differ in terms of the levels on these variables.

It can be seen that analyses using the different units of measurements contributed to the overall understanding of group differences in different asepcts of the self. The groups showed no difference in pattern of scores when T-scores were used. However, the use of both z-scores or non-transformed raw scores revealed interesting patterns. Furthermore, none of the 4-group comparisons revealed any significant pattern differences. This indicated that the affective and behavioral groups do not differ in their *pattern* of scores on the *TSCS*. They do differ in the *level* for each of the three subscales (as revealed by the significant *levels* tests on all three sets).

Finally the results from the univariate ANOVA of the computed difference between *Self Sat* and *Ident Self* Scales would be presented (see Table E5). Of the three different units of measurements (z-score transformation, raw scores, or T-score), the raw score seems to be the most appropriate.[22] The ANOVA of the difference score (*Self Sat* minus *Ident*) was significant ($p= .044$). All groups showed a negative discrepancy: ranging from -15.7 (*ADD*) to -2.4 (*VC*). The directionality of the discrepancy, *negative*, means that the level of self satisfaction is *lower* than the individual's current view of oneself. Post hoc analysis using the Scheffe test did *not* reveal any specific group differences. However, when the post hoc Duncan procedure was used (more liberal), the *MDD* group's discrepancy score (-13.5) was significantly different from those of the *CD* (-5.6) and *VC* (-2.4) groups. Thus, the trend in the data lends support to Beck's prediction with respect to the *direction* of the discrepancy.

In summary, the analyses with the *TSCS* variables using different unit of measurements provided complementary information. The analyses with z-scores revealed that although the diagnostic groups differ in their pattern and direction of deviations from the sample mean, their absolute amount of deviations showed similarity among some of the groups. The analyses with non-transformed raw scores revealed that the *ADD* and *VC* groups showed unique patterns of scores. The analyses with T-scores revealed that all groups had a similar pattern of scores with respective to the standardization norms. They differ in their overall level of positive self-concept with the *MDD* group showing the poorest and the *VC* group the best of the six groups. Finally, the ANOVA on the discrepancy score between *Self Sat* and *Ident Self* Scales revealed that there is support for Beck's prediction about the process of depression on this discrepancy.

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[22] The use of the z-score would make interpretation difficult because both the direction and the sign of the difference score are affected by the relative ranking of the individual scores. The use of the T-score may not be appropriate because of the normative sample.

These series of profile analyses, varying the number of groups and the type of scores used (for the *TSCS* variables), have provided a detailed *quantification* of differences and similarities amomg the six diagnostic groups on measures of depression, self-esteem, and locus of control. The transformation to z-scores based on the entire sample was instrumental not only in allowing the use of *all* the self-report data but in the *shift* to analysing differences in *deviations* rather than just absolute differences.

B. Discriminant Function Analyses: Accuracy in Predicting Group Membership

The use of the discriminant analysis complements the results from the profile analyses. While profile analysis studies differences in *profile* of groups on specific variables, discriminant analysis provides information regarding the *accuracy rates* of specific sets of variables on the prediction of group *membership*. To the extent that different groups score similarly on different scales, they would be more difficult to discriminate than those groups that score differently. Discriminant analysis also allow the combination of predictor variables regardless of unit of measurement, therefore, it does not have as many restrictions as profile analysis. The only restriction is that the none of the predictor variables are linear combinations of another. In addition to providing researchers with specific accuracy rate tables, discriminant weights are generated for each predictor variable so that one can attempt to classify cases of *unknown* group membership.

For this study, the membership to be predicted was *diagnostic category* and the predictors were the *self-report measures*. The six diagnostic groups were: *MDD*, *DYS*, *CD*, *OPP*, *ADD*, and *VC*. The five predictor variables were scores on: *CDI*, *I-E*, *Ident Self*, *Self Sat*, and *Behav Self*. Two levels of discriminant analysis were performed on the data. The *first* level was to compare the *discriminant power* of using z-scores, raw scores, or T-scores.

To reiterate, z-scores referred to the use of scores from the z-score transformations made on all five variables as in the profile analysis. Raw scores referred to the use of non-transformed scores for all five variables. T-scores referred to the use of standardization scores for the *TSCS* variables based on the norms provided by the test manual while using raw scores for the *CDI* and *I-E* scales. The *second* level was to contrast different *combinations* of diagnostic groups. That is, are there combinations or deletion of groups that would improve overall and specific discrimination?

Appendix F shows the classification tables for the two levels of discriminant analysis. The tables are set up such that both the pattern of correct and incorrect predictions can be readily discernible. For example, for the *MDD* group in the first table, it can be seen that 32/61 (52.5%) cases were correctly predicted. Most of the incorrect prediction placed the *MDD* cases in the *ADD* group: 9/61 (14.8%) cases. That is, the pattern of scores from 9 *MDD* cases was closer to that of the *ADD* group than *MDD*.

Overall, at the level of different kinds of measures, the discriminant analysis based on *raw scores* was generally the most *accurate* across the different combinations of groups. For example, for the six group combination, the accuracy rate were 38.6%, 36.8%, and 33.7% for raw scores, T-scores, and z-scores respectively. At the level of different diagnostic groupings, the most accurate one was the combination with *MDD*, *CD+OPP*, and *VC*. Since the pattern of results among the different kinds of measures were the same, only the raw score set would be discussed in detail.

The overall accuracy based on all six groups was only 38.6%. Although all groups achieved correct identification greater than chance (ie., greater than 1/6), only two groups achieved greater than 50% identification: *VC* and *MDD* (54.5% and 52.5% respectively). Based on the results from the profile analysis that showed the *CD* and *OPP* groups to be virtually identical, the *CD* and *OPP* groups were combined for the next analysis. This resulted in a slight improvement in the overall accuracy to 44%. The behavioral groups could now be correctly identified at 41.2%.

The next analysis focused on three broad groupings: affective (*MDD+DYS*), behavioral (*CD+OPP*), clinical control (*VC*). This resulted in a substantial improvement in the overall accuracy to 60.78%. The best group is the affective one (62.6%). Based on the finding (from the profile analysis) of lack of *distinctiveness* of the *DYS* group, the last analysis focused on only the *MDD*, *CD+OPP*, and *VC* groups. That improved the overall accuracy to 63.4%. All three groups showed above 50% accuracy rates. The *MDD* group showed the highest hit rate at 67%. Depending on the theoretical perspective, either of the last two groupings are both valid and have quite acceptable accuracy rates.

The same series of discriminant analysis was performed substituting two different subscore for the *I-E* global scale (see Tables F4 and F5). Because of the proportional nature of the subscores, only one from each perspective was used: *VIC* from the self attribution and *NC* from the world attribution. (Please refer to the section on Treatment of Data for the derivation of these *I-E* subscores.) Overall accuracy rates remained similar as compared to the ones obtained from the analysis using the global score. There were small decrease in accuracy for the affective groups but this was offset by the increases for the behavioral groups. There was virtually no change for the *VC* group.

In summary, the five self-report predictor variables achieved accuracy rates ranging from 34% to 63%. Generally the use of raw scores was superior to either z-scores or T-scores. The substitution of subscores from the *I-E* scale produced minor changes over those obtained from raw scores in the accuracy rates but the overall rates remained the same. Overall, the combinations of groups that produced the best accuracy rates were either: (1) *MDD+DYS*, *CD+OPP*, and *VC* (60.8%); or (2) *MDD*, *CD+OPP*, and *VC* (63.4%). Not surprisingly (given the profile analyses results), the *MDD* group had the best overall accuracy rate of 67%.

C. Univariate Analyses: Gender Differences in Diagnostic Groups

Gender and diagnostic group differences were investigated for all major variables in a two-way diagnostic group by gender ANOVA design. The results are presented in Appendix G. The main effects of gender would be presented first. There were *gender* differences on all the three major concepts investigated in this study. In the area of *depression*, females scored more depressed on the CDI than males (16.6 versus 11.6). For *locus of control*, females scored more external on the *I-E* than males (11.0 versus 9.9). Further analyses of the *I-E* subscales revealed that females scored higher on the *VIC* subscale from the self attribution perspective and scored higher on the *NC* subscale from the world attribution perspective (4.8 versus 4.1, and 7.0 versus 6.5 respectively). For *self-concept*, females scored lower on the *Identity* subscale of the *TSCS* than males (104.6 versus 110.6).

There was only significant gender by diagnostic group *interaction* for the locus of control variables: *VIC* and *NV*. The pattern is the same for both of these variables. Females scored higher or the same on the *VIC* and *NC* variables than males for all diagnostic groups except the *OPP* group where they scored significantly lower.

There were significant ***group*** differences across all three major concepts: depression, locus of control, and self concept. Post-hoc Scheffe tests ($p = .05$) were used to delineate group differences. For the ***depression*** score, the *MDD* group scored significantly higher than both *CD* and *OPP* groups. For the ***locus of control*** measures, although there was a significant main effect on the *PNC* variable, post hoc Scheffe tests did not reveal any group differences. The trend would suggest that the *CD* group scored higher than either of the affective groups (*MDD* and *DYS*). For the *TSCS* variables, there were significant main effects for ***Total Positive***, ***Self Sat***, and ***Behav Self*** Scales. These results were obtained with both T-scores and raw scores. Scheffe tests revealed that the *MDD* group scored lower than the *CD* group on ***Total Positive***, and ***Self Sat*** Scales (285.6 versus 314.3 and 90.3 versus 104.7 respectively). As well, the *MDD* group also scored lower than the *VC* group on the *Self Sat* Scale (90.3 versus 109.0). Scheffe testing did not reveal any group differences for the *Behav Self* Scale. The trend would suggest that the *MDD* group also scored lower than both the *CD* and *VC* groups (91.0 versus 99.3 and 99.9).

In summary, there were gender differences for all three constructs. Females scored more depressed, more external, and lower in self-esteem than males across virtually all diagnostic groups considered. There was only one minor group by gender interaction. This pattern of gender differences is consistent with those in the adult literature, suggesting that adolescent females (at least those in this study) already share the same cognitive and emotional vulnerabilities as their adult counterparts. The univariate analyses of group differences showed that many of them were due to differences between the *MDD* and behavioral groups (*CD* and *OPP*).

Part Three: INTERRELATIONSHIPS - DEPRESSION, SELF-ESTEEM, AND LOCUS OF CONTROL

A. Interrelationships in an Outpatient Adolescent Facility

Up to now, the focus of analysis had been diagnostic group differences. In this section, the relationships among the three major concepts: depression, locus of control, and self-esteem would be examined for this outpatient clinical population. The issue is the relationships of these constructs in selected psychopathologies. Most investigations, because of the emphasis on the delineation of group differences, have focused on ***differences*** of these constructs in different groups. The issue of ***interrelationships*** has not received the same emphasis. (A more specific discussion of the process variables of depression and their relationship to locus of control and self concept would be presented in the next section.) The interrelationships were examined by the generating a Pearson Product Moment correlation matrix (see Tables 14 and 15).

Insert Table 14 about here

Insert Table 15 about here

The use of the correlation coefficient necessitates a discussion of the decision rule for establishing its significance. The current accepted rule is to set the criterion for significance at $p = .05$. However, the significance level for a correlation coefficient is dependent on the sample size. That is, the size of the correlation required to reach significance (eg., $p < .05$) decreases with increasing sample sizes. Although this is the same for any other tests of significance, this poses a particular problem for correlation coefficients. A coefficient of much less than *0.3*, although significant at $p = .05$ for sample sizes greater than 30, would only account for approximately 10% or less of the variability between the two variables. For this study, some of the coefficients calculated would be based on the entire sample of 214. In these instances, a coefficient of approximately *0.15* would have been declared significant at the $p=0.05$ level. This would only account for approximately 2% of the variance between the two variables being correlated. Thus, in an effort to balance between reporting *trivial* correlations and adherence to the $p=0.05$ cut-off, only coefficients that are at least *0.20* would be reported. The results would be presented for ***CDI***, followed by those of the ***I-E***.

The ***CDI*** showed only one notable correlation with locus of control variables. ***CDI*** was positively correlated with ***PAG*** items ($r=.209$). That is, as the severity of depressive symptoms increases, so does the feeling of passivity. ***CDI*** was not correlated with the global score from ***I-E*** nor any of the other derived scores. However, the ***CDI*** had notable correlations with all four ***TSCS*** variables. ***CDI*** was negatively correlated with all three subscales and total score of the ***TSCS*** (ranges from -0.378 to -0.526). Generally, the coefficients were higher when raw scores were used instead of T-scores. The negative correlations were consistent with findings in the existing literature.

The global score from the ***I-E*** scale was not correlated with any of the other variables. However, subscale ***PAG*** was negatively correlated with three out of the four variables from the ***TSCS*** (both raw and T-scores). The coefficients (with raw scores) were: -.216 for ***Ident Self***, -.245 for ***Behav Self***, and -.239 for ***Total Positive***. (The correlation with ***Self Satis***, $r=-.16$, failed to reach the suggested cut-off of $r=.20$.) These findings indicate that as various aspect of the self-concept decreases, the feelings of passivity increases. Unlike the absolute score, there was only one significant correlation for the proportion score for ***PAG*** (with ***Behav Self***, $r=-.206$, raw score). Finally, feelings of non-control (***NC***) was negatively correlated with ***Ident Self*** ($r=-.207$; T-score). That is, as the self-concept decreases, the feelings of non-control increases.

Since ***CDI*** was correlated with some aspect of locus of control (***PAG***), the relationship between locus of control variables and ***TSCS*** variables were re-examined by partialling out the influence of depression (Table 15). When this was done, none of the previously noted relationships achieved the suggested cut-off (i.e., to have a coefficient of at least .20). The coefficients for *PAG* dropped to -.171 with *Behav Self* and -.130 with *Ident Self.* Thus, it can be concluded that the relationships between feelings of passivity (*PAG*) and *TSCS* variables were due to its relationship with severity of depression.

In summary, severity of depressive symptomatology was correlated with aspects of self-concepts. Feelings of passivity (*PAG*) was also correlated with aspects of self-concept. However, these seemed to be mediated through its correlation with severity of depression. The generalizibility of these interpretations to psychopathology per se need to be cognizant of the large proportion of affective disorders in this sample. The noted relationships may largely be specific to depressive disorders.

B. Length of Depression: Impact on Self-Esteem and Locus of Control

This section deals exclusively with the affective groups, *MDD* and *DYS*. It examines, in detail, the relationship between length of depression (and dysphoria) and measures of self-concept and locus of control. Two variables: length of current depressive or dysthymic episode (in months), and lifetime total (of same), were estimated from the initial report and psychiatric assessment. These two *process* variables were then correlated with the psychometric measures in the study (see Table 14).

For the *DYS* group, all cases presented with only one episode of dysthymia. Thus, the length of the current episode is the *same* as the lifetime total. The average length of the current episode of dysthymia (*TDYS*) was 14.87 months (*SD*=5.91, ranges from 8 to 36 months). For the *MDD* group, the average length of the current episode of major depressive disorder was 9.98 months (*SD*=6.04, ranges from 1 to 30 months). Unlike the dysthymia group, there were individuals in this group who have had more than one episode of depression (that is, the current length was not equal to the lifetime total). The average lifetime total was 11.72 months (*SD*=7.45, ranges from 1 to 36 months).

The findings with *TDYS* would be presented first. There were three notable correlations (*r* of at least 0.20). TDYS was negatively correlated with *Self Sat* Scale (*r*=-.292). This means that as the length of the current episode increases, the level of Self Sat decreases. *TDYS* was positively correlated with both *PAG* and *PPAG* (*r*=+.278, and *r* = +.266 respectively). This means that as the length of the current episode increases, the adolescent endorses more ***PAG*** items from the *I-E* overall, and proportionally more ***PAG*** items than *VIC* items. That is, as the length of the current episode increases, there is greater feelings of passivity. This is similar to the relationship between severity of depression (*CDI*) and passivity noted previously.

The strength of these relationships dropped slightly when the effect of depression (*CDI* score) was partialled out. The correlation with ***Self Sat*** Scale changed to -.242 while the ones with ***PAG*** and ***PPAG*** changed to .229 and .224 respectively. Thus, length of dysthymia seems to be related to both self-esteem and locus of control measures *irrespective* of the current level of depression. It was surprising that length of dysthymia was not correlated with level of depression as measured by the *CDI*.

For the process measures of major depression, there was only one correlation that reached the cut-off level with the initial analysis. The lifetime total (*TTMDD*) was negatively correlated with the proportion of *NC* items endorsed on the *I-E* (*r* = -.213). Although the correlation with the absolute number of *NC* items endorsed did not reach the cut-off of .20, the *r* of -.169 was was in the same direction as the proportional score.

When the current level of depression (*CDI* score) was partialled out, the strength of the relationship did not change (*r* = -.212) (see Table 15). That is, the longer the exposure to depression, the less likely that the adolescent would endorse proportionally more *NC* items on the *I-E* irrespective of the current level of depression. However, the correlation of lifetime total with *Ident Self* Scale improved substantially, from *r* = .185 to *r* = .251. That is, when the current level of depression was controlled for, the longer the lifetime total exposure to depression, the higher the number of positive self statements endorsed.

The length of the current depressive episode (***TMDD***) was not correlated with any of the variables of interest either with or without the effect of current level of depression being controlled for. Finally, as with the process variable for dysthymia, the process variables for depression (*TMDD, TTMDD*) were not correlated with *CDI*.

In summary, although the process measures were very inexact proxies for *chronicity*, there were some modest relationships with locus of control and self-esteem measures. These relationships held up even when the *current* level of depressive symptomatology was controlled for (ie. *CDI* score). The most interesting relationship was the unexpected *positive* correlation between length of depression (*TTMDD*) and the number of positive self-concepts (*Ident Self*).

Result Highlights

The results are summarized below, organized by the major parts: instrumentation, group discriminability, and interrelationships.

Part One: Instrumentation - DSM-III

1. *Inter-rater Reliability of DSM-III Diagnostic Categories*

   Two methods used to determine the inter-rater reliability of the DSM-III diagnosis used in this study: the Kappa coefficient, and a rating scale of agreement. The Kappa coefficients for the six major diagnostic categories range from 0.558 (Dysthymia) to 0.771 (Conduct disorders). The overall Kappa was 0.688 which falls in the 'good' range. The results using the rating scale which considers all the diagnoses for each case was consistent with the Kappa calculations. Eighty-three percent (83%) of cases had either an excellent or good rating. Thus, it can be concluded that the Axis-I DSM-III diagnoses have been reliably assigned.

2. *The Effect of Multiple Diagnoses on Group Placement*

   The central question was whether cases with the same primary diagnosis but different secondary diagnoses (or no secondary diagnosis) were *homogeneous* enough to be considered in the same diagnostic group. Forty-eight percent (48%) of all cases in the study had more than one Axis-I diagnosis. When only the six major diagnostic groups were considered, 43% still had more than one diagnosis. The various analyses revealed that there were few *minor* differences within some of the diagnostic groups. However, it was concluded that these differences were not central enough to change any of the group assignments.

Part One: Instrumentation - Self-Report Scales

1. *Suitability of Self-Report Scales for an Adolescent Population - Internal Consistency*

Alpha coefficient was calculated for each of the three scales used in the study to determine the scales' suitability for use in this clinical adolescent population. All three scales showed adequate to excellent alpha coefficients. The coefficients ranged from 0.550 for the *I-E* scale to 0.921 for the *TSCS* (overall score). These results are generally consistent with those reported by the publishers of the respective instruments. The low internal consistency of the *I-E* scale for the clinical adolescent population is problematic and it may indicate either the scale is not suitable for this group or that the concept of locus of control cannot be measured reliably in this group. Since Franklin (1969) did report internal consistency of 0.69 for the *I-E* on a sample of 1000 senior high students; that would imply that the concept of locus of control can be measured in this age group. Thus, it was concluded that the *I-E* was ***marginally*** suitable to be used for this population.

2. *Suitability of Self-Report Scales for an Adolescent Population - Factor Analyses*

Each scale was individually factor analyzed to examine the factor structure for a clinical adolescent population. All three scales yielded interpretable factors for this sample.

For the *CDI*, principal component analysis resulted in a 4-factor solution accounting for 44% of the variance. The first two factors have to do with depressed mood and loneliness. The third factor has to do with oppositional and self-blaming behaviors. The last factor has to do with problems in the school setting.

Principal component analysis of the *I-E* scale yielded two factors accounting for 18% of the variance. The first factor deals with feelings of ***externality*** with regards to world or political affairs. The second factor deals with feelings of ***passivity*** with regards to one's control of one's life.

Principal component analysis of the *TSCS* yielded at least eight factors. However, the 5-factor solution was the most interpretable. Most of the eight major subscales of the *TSCS* were reproduced. *Factor I* consisted of items mostly from the *Ident Self* subscale for the internal reference and items from the *Physical Self* subscale for the external reference. *Factor II* consisted of items from the *Behav Self* subscale (internal) and items from the *Social Self* subscale (external). There was no consistent pattern on *Factor III* for the internal reference but these items were mostly from the *Family Self* subscale for the external reference. *Factor IV* consisted of items from both the *Self Satis* and *Behav Self* subscales (internal) and the *Moral-Ethical Self* (external). *Factor V* consisted of items from the *Self Satis Scale* (internal) and the *Moral-Ethical Self* (external) subscales.

3. *Independence of the Measures for Depression, Self-Esteem, and Locus of Control - Crossed Scaled Factor Analyses*

The major concern was to identify cross loadings among the three scales in the study. To reiterate, a cross loading was defined as an item that loaded significantly higher on another scale than its own. Four different combination of crossed-scales factor analyses were performed: *CDI+TSCS+I-E*, *CDI+TSCS*, *CDI+I-E*, and *TSCS+I-E*. There were remarkably little cross loadings of any of the items onto another scale. For the *CDI*, there were only three items that showed any cross loadings. These were items dealing with feelings of fatigue (*C17*), isolation (*C22*) and disobedience (*C26*). All of these occurred in the *CDI+TSCS* analysis. There was only one item on the *I-E* that showed cross loading (*school grades-I23*) in the *CDI+I-E* analysis. None of the *TSCS* items showed any cross loadings in any of the analyses involving the *I-E* scale. Thus, it can be concluded that the amount of cross loadings was not severe enough to consider altering any of the scales by either deleting the cross-over items from the original scale or by adding the items to the new scale.

Part One: Instrumentation - Summary

In summary, the DSM-III diagnoses have been assigned reliably. The inter-rater reliability estimates based on the kappa calculations were very similar to those based on the rating scale. The impact of multiple diagnoses on the self-report measures used in this study was miminal; therefore, group assignment based on primary DSM-III diagnosis was justified. Based on internal consistency results, two of the three self-report scales showed excellent suitability; the *I-E* scale showed weaker internal consistency. Individual factor analysis results complemented those from the internal consistency. The cross-scaled factor analyses revealed *relative* independence of the three scales.

Part Two: Group Discriminability Based on Measures of Depression, Self-Esteem, and Locus of Control

1. *Profile Analyses - Differentiation of Diagnostic Groups Using Self-Report Data*

   Profile analysis was used to investigate the nature and extent of differences in profile on the psychometric measures for each of the six main diagnostic groups. The results from the *5-variable* analyses revealed that there were significant tests of *parallelism* and *levels*. The *DYS* group showed a surprisingly flat profile of minimal deviation from the sample mean on all 5 variables. The behavioral groups, *CD* and *OPP*, showed a pattern of deviations that were virtually opposite to that of the *MDD* group. The *VC* group had a similar pattern to the behavioral groups and thus also contributed to the overall significant tests of *parallelism*. The *ADD* group, having an unique pattern of deviations, also contributed towards the overall significant effects.

   The results from the *3-variable* analyses revealed that the different units of measurements of the *TSCS* variables provided complementary information on the pattern of differences among the six diagnostic groups. The *z-score* analyses revealed that although the groups had different pattern and direction of deviations from the sample mean, the total amount of deviations showed several groups to be similar. The *non-transformed* raw score analyses revealed that the significant test of *parallelism* was due to the different patterns of the

ADD and *VC* groups from the rest. Finally, the *T-score* analyses revealed that although the groups all showed a similar profile with respect to the standardization norms (of the *TSCS*), the groups did differ in the overall number of positive self concepts endorsed.

The series of profile analyses were performed to test three hypotheses. The various significant results allowed for the rejection of two out of three. All groups, except the *CD* and *OPP* groups, did show ***different*** patterns of scores across the 5 dependent variables. Secondly, there was a significant difference in the ***profiles*** of the groups with respect to the *TSCS* variables. Finally, although the *MDD* group did not show the largest discrepancy between the *Self Sat* and *Ident Self* Scales in the ANOVA, post hoc analysis with the Duncan procedure revealed that the *MDD* group to be different from the *CD* group on this variable.

2. *Discriminant Function Analyses - Accuracy in Predicting Group Membership*

Discriminant analysis was performed using the five major psychometric measures to predict diagnostic group membership. Two levels of discriminant analysis were performed: varying the ***kind*** of scores used, and varying the ***combination*** of groups to be predicted. The results from the kind of scores revealed that the analyses using ***raw scores*** were superior to those using either *T-scores* or *z-scores*. The results from the different combination of groups revealed that the combination with the best overall accuracy rate was: *MDD*, *CD+OPP*, and *VC*. For this combination of groups, the hit rate was 67.2%, 60.8% and 54.5% for *MDD*, *CD+OPP*, and *VC* respectively. This resulted in an overall accuracy rate of 63.4%. When either the subscale *VIC* or *PC* were substituted for the global *I-E* scale score in the raw score analyses, the accuracy rates remained essentially the same.

The null hypothesis that diagnostic group membership could not be predicted from psychometric measures was rejected. The specific accuracy rate for different diagnostic groups varied greatly. The *MDD* group could be predicted most accurately, achieving the highest hit rate at 67.2%. In contrast, the most difficult group to be predicted was the other affective group; *DYS*. That group only achieved an accuracy rate of 26.7%. These results parallelled those from the profile analyses wherein the *DYS* group was the most indistinctive of the six major diagnostic groups.

3. *Univariate Analyses - Gender Differences in Diagnostic Groups*

Two-way analysis of variance was used to investigate gender and diagnostic group effects on the psychometric measures. There were gender main effects on all three concepts: depression, locus of control, and aspects of self concept. Females scored more depressed, more external, and endorsed fewer positive self statements on the *Ident Self* scale of the *TSCS* scale than males. There was only significant interactions for the subscales of *I-E*: *VIC* and *NV*. Females endorsed more *VIC* and *NC* items than males for all diagnostic groups except the *OPP* group.

In terms of diagnostic group main effects, there were also significant effects on all concepts: depression, locus of control, and aspect of self concept. The *MDD* group scored higher on the *CDI* than both the behavioral groups, *CD* and *OPP*. For the locus of control variables, the trend was for the *CD* group to score higher on the *prop NC* than the affective groups, *MDD* and *DYS*. For the *TSCS* scales, all specific group differences centred around the *MDD*, *CD* and *VC* groups. The *MDD* group scored lower than the *CD* group on both *Total Positive*, and *Self Sat* Scales. As well, the *MDD* group scored lower than the *VC* group on *Self Sat* Scale. Finally, the trend suggest that the *MDD* group also scored lower than both *CD* and *VC* groups on the *Behav Self* Scale.

Thus the null hypotheses concerning gender and diagnostic group differences were rejected. Measures from all the three concepts of depression, locus of control, and self concept showed significant gender and diagnostic group differences. Most of these differences were from the *MDD*, *CD*, *OPP* and *VC* groups. Neither the *DYS* nor the *ADD* groups were involved in any specific significant effects.

Part Two: Group Discriminability - Summary

In summary, the majority of the diagnostic groups showed distinctive profiles on the self-report scales. In particular, the *MDD* group had the most severe profile: highest score on the *CDI*, lowest scores on *TSCS* subscales, and largest discrepancy between *Self Sat* and *Ident* subscales. Behavioral groups, *CD* and *OPP*, were virtually indistinguishable from each other. The best overall accuracy rate achieved with the discriminant function analyses was 63.4%, based on the discrimination of the following: *MDD*, *CD+OPP*, and *VC* groups. The univariate analysis results complemented those from the profile analyses. Many of the specific group differences were due to those between the affective (*MDD*) and behavioral groups (*CD* and *OPP*).

Part Three: Interrelationships - Depression, Self-Esteem, and Locus of Control

1. *Interrelationships in an Outpatient Adolescent Facility*

Correlational analysis was used to examine the relationships among depression, locus of control, and self concept for the entire sample. The results revealed that there were significant correlations among these variables. *CDI* score was positively correlated with number of *PAG* items endorsed on the *I-E*. Thus, as the severity of depression increases, so does the feeling of passivity concerning one's control over life. The *CDI* score was also correlated with measures from the *TSCS*. The coefficients ranged from -0.38 (with *Self Sat* Scale) to -0.53 (with *Total Positive* Score). Thus, as the severity of depression increases, the number of positive self statements endorsed regarding different aspects of one's self concept decreases.

In addition to correlating with the severity of depression, the number of *PAG* items endorsed was also correlated with variables from the *TSCS*. However, when the severity of depression was controlled for, these correlations disappeared.

Thus, the null hypothesis that there would be no relationship among scores on depression, locus of control, and self concept was rejected. Although the strength of the association between depression and locus of control was quite modest, the direction -*positive*- was as predicted. The moderate negative correlations between depression and aspects of self concept were consistent with existing literature.

2. *Length of Depression: Impact on Self-Esteem and Locus of Control*

These variables were used to examine the relationships among the length of depressive or dysphoric episodes, locus of control and aspects of self concept. For the *DYS* group, there were notable correlations between *length* of dysthymia and the *Self Sat* scale (negative) plus dysthymia and the number and proportion of *PAG* items endorsed (both positive). The strength of these relationships were retained even when the current level of depression was controlled for.

For the *MDD* group, there was only one notable negative correlation between the *lifetime total* of depressive episode and proportion of *NC* items endorsed. When the current level of depression was controlled for, the lifetime total was positively correlated with *Ident Self* Scale. This was a somewhat unexpected finding because of the well established inverse relationship between the level of depression and self concept. However, this finding may indicate that with longterm exposure to depression, there is a strong need to project a more positive image of oneself as a way of coping with the debilitating effects of chronic depression.

The null hypothesis that there would be no relationship between these process variables and *TSCS* and locus of control variables could be rejected. However, the alternative hypothesis regarding the positive correlation between length of depressive episode and locus of control variables was not founded. As well, the complex interplay of level of depression with these variables was unexpected.

Part Three: Interrelationships - Summary

Scores on the *CDI* were correlated with both the *PAG* score on the *I-E* and *TSCS* subscales. The positive correlation with *PAG* suggests that as depressive symptomology increases, the feeling of passivity also increases. The negative correlations with *TSCS* scales were consistent with findings from existing literature. Results from the process variables suggest that the duration of dysthymia and major depression significantly impacts on one's self-esteem and locus of control.

Overall Summary

Analyses were aimed at addressing three major questions: (1) the reliability and suitability of the instrumentations used; (2) diagnostic group discriminability; and (3) the interrelationships among the three major constructs (of depression, self-esteem, and locus of control). Inter-reliability estimates using either the Kappa coefficient or the proposed rating scheme yielded similarly good results. The effect of multiple diagnoses was minimal, thus allowing cases to be placed in groups based on only the primary DSM-III diagnosis. The three scales used showed excellent to adequate internal consistency for use with a clinical adolescent population. Cross-scaled factor analyses established the relative independence of the self-report instruments despite the obvious conceptual overlap between depression and low self-esteem.

Group discriminability analyses revealed that each of the diagnostic groups to have distinctive profiles. The *MDD* group was the most pathological; the *VC* group the least. The *ADD* group had both affective and behavioral group features. Prediction using all self-report measures resulted in the best overall accuracy rates when the *ADD* group was excluded and the behavioral groups were collapsed into one.

Interrelationships of depression and self-esteem were as expected from the literature. The correlations of locus of control and self-esteem were mediated by current level of depressive symptomatology. The length of depression or dysthymia seemed to be correlated with both self-esteem and locus of control. These findings suggest that more rigorous measures of chronicity (of depression) should be pursued.

Chapter V DISCUSSION

This study investigated the cognitive and emotional aspects of depression in adolescents by examining the relationship of depression with self-esteem and locus of control in an outpatient adolescent population. It was hypothesized that a better understanding of depression can be obtained by comparing affective disorders with other psychopathologies. The study used adult-based theory and classification system. Beck's cognitive theory of depression was developed from and for adults; its application for children and adolescents has not been vigorously pursued. Whereas there has been tremendous debate in the past 10 years regarding the phenomenon of depression in prepubertal children, work with the adolescent group has not benefitted from the same intense discourse. It is only with the new interest in the adolescent as a *separate* group that instruments are beginning to be developed *specifically* for this population. Some of the measurement issues raised in this study are in part to deal with the *suitability* of existing assessment instruments for adolescents.

The discussion is divided into six major sections: (1) psychiatric diagnosis and classification, (2) self-report scales, (3) group discriminability, (4) interrelationships among depression, self-esteem, and locus of control, (5) contributions of the study, and (6) conclusions and implications.

Psychiatric Diagnosis and Classification

As with any classification system, the two most important aspects are reliability and validity of the diagnostic categories. Although there are some variability in the reliability estimates for specific categories, the DSM-III has made strides to improve its reliability over its predecessors. The DSM-III and the ICD-9 have more similarities than differences. The question of validity of the categories remains an area that require continual research. Although this study is not specifically designed to deal with the construct validity of psychiatric diagnoses, differentiation among the different diagnostic groups on self-report data offer modest evidence towards diagnostic validity.

Utility of the Rating Scheme

The study's proposed rating scheme seems to show promise as an alternative tool for assessing inter-rater reliability for concurrent multiple clinical diagnoses. The more commonly used Kappa procedure is most suitable for testing the inter-rater reliability for the occurrence of *discrete* events (Cohen, 1966). Although the procedure has been used to determine reliability of clinical diagnosis, it cannot deal with the *pattern* of multiple events such as the possibility of multiple diagnoses with the DSM-III. Although there is also the possibility of using the weighted Kappa procedure for this situation, this procedure confounds the inaccuracy of determining the relative contingent frequencies among the multiple events and the actual inter-rater reliability of the occurrence of the events. Mezzich and associates have suggested a procedure to deal with multiple diagnoses and multiple raters (Mezzich, Kraemer, Worthington, & Coffman, 1981). However, the calculations are quite involved.

Much further research would be required to test out the utility of the rating scheme. The next step would be to replicate the utility using another sample perhaps in another setting. This step is very important as the actual inter-rater reliability for another sample may be quite different and the *sensitivity* of the rating scheme may not be uniform for the entire range of reliabilities. More importantly, the range of possible disorders found in another setting may significantly interact with the difficulty level of differential diagnosis and in turn affect the level of inter-rater reliability that can be attained. The base-rate of a disorder also affect the ease with it can be diagnosed (Grove, Andreasen, McDonald-Scott, Keller, Shapiro, 1981; Widiger, Hurt, Frances, Clarkin, & Gilmore, 1985).

Although DSM-III was especially designed to accommodate the possibility of multiple diagnoses, the issue of reliability of multiple diagnoses has not been substantially investigated. Studies that report reliability information typically report that for the primary diagnosis. For studies that especially investigate the co-occurrence of disorders, reliability information would either be not reported or reported in such a way that it would be impossible to tease out how it was derived.

Nevertheless, for the purpose of this study, the similarity of the findings from using the Kappa procedure and the rating scheme suggest that the DSM-III diagnoses has been reliably assigned. With the introduction of the DSM-IV to come in the near future, it would be interesting to see if that would spur a renewed interest in issues of inter-rater reliability of multiple diagnoses.

Specific Diagnoses

The inter-rater reliability information suggests that the diagnosis of dysthymia was the most difficult to make (ie, has the lowest reliability). This is consistent with findings of the relative heterogeneity of the concept in other studies (Kocsis & Frances, 1987; Marriage, Fine, Moretti, & Haley, 1986). The relative heterogeneity may also explain the indistinctiveness of the *DYS* group in analyses of group differences. Kocsis & Frances noted the following changes in the diagnosis of dysthymia in the DSM-III-R. Dysthymia can now be categorized as one of the following: "1) as a residual syndrome following major depression, 2) primary versus secondary, 3) with an early versus a late onset, 4) related to chronic severe stress, 5) with or without an accompanying personality disorder diagnosis on Axis II, and 6) with or without an accompanying major medical disorder on Axis III" (Kocsis & Frances, 1987, p. 1540). Research is needed to judge if these changes improve the reliability of the dysthymia diagnosis.

The inter-reliability estimates of the other disorders are in the acceptable ranges. Although the *OPP* diagnosis seems reliable, there has been questions concerning its validity (Rey, Bashir, Schwarz, Richards, Plapp, & Stewart, 1988; Rutter & Shaffer, 1980). The *similarity* of the group's profile on depression, self-esteem, locus of control measures to that of the conduct disorders in this study also raise the issue of validity and lends support to the hypothesis that *OPP* is a milder form of *CD* (Rey, *et al.*, 1988).

One of the major changes of the DSM-III-R over the DSM-III is the explicit documentation of the severity of the disorders: mild, moderate, severe, in partial remission, and in full remission (DSM-III-R, 1987). Furthermore, for nine disorders, specific criteria are listed for the rating of severity levels. It is significant that of these nine, three are childhood disorders: Conduct Disorders, Oppositional Defiant Disorder (formerly Oppositional Disorder in DSM-III) and Attention Deficit Disorders. In addition, the diagnostic criteria of both the Conduct Disorders and Attention Deficit Disorders have been substantially changed. It would be interesting to see how these changes would affect the reliability and construct validity of these disorders.

Multiple Diagnoses

The analyses suggest that although more than 40% of the cases have multiple diagnoses, the impact of secondary diagnoses seems minimal. Cases with secondary diagnoses did not differ substantially from those that have only one primary diagnosis. For this study, the self-report data showed little difference between those with single versus those with secondary diagnoses. This is inconsistent with studies that suggest cases with multiple diagnoses are different than those with only one (Biederman, Munir, & Knee, 1987; Marriage, *et al.*, 1986). However, some of these differences dealt with demographic and background variables.

As stated previously, this study was not specifically designed to study the impact of multiple diagnoses on the presentation of symptomatology. The lack of any substantial differences among cases with secondary diagnoses when compared to those with only the primary diagnosis permited the aggregation of all cases by only the primary diagnosis.

Comorbidity

The literature on comorbidity has typically dealt with associated background and demographic features (eg, Werry and his associates; Werry, Reeves, & Elkind, 1987; Reeves, *et al.*, 1987). These measures attempt to address the question, among others, of ***differential*** etiologies. Although this study did not focus on background and demographic data, it can address the ***pattern*** of comorbidity. The ***ADD*** group has the highest percentage of secondary diagnosis: 61% (see Table 4; ***MDD***: 32%; ***DYS***: 50%; ***CD***: 46%; and ***OPP***: 31%). Of the 8 cases with secondary diagnosis, 5 of them were ***CD*** or ***OPP*** (see Table 8). This is consistent with other studies noting the co-occurrence of ***ADD*** and other disorders (Shapiro & Garfinkel, 1986; Biederman, Munir, & Knee, 1987; Munir, Biederman, & Knee, 1987). The DSM-III states that ***ADD*** is a common additional associated features of all subtypes of conduct disorders (APA, 1980, p. 46). The findings from this study of (1) no difference between *ADD-alone* and subgroups of *ADD+others* on depression, self-esteem, and locus of control, and (2) *ADD* showing moderately *poor* discriminability from other disorders (correct identification <54%) are consistent with the conclusions of Werry and associates that *ADD* and behavioral disorders have weak *differential* diagnostic validity..

Aside from the comorbidity of *ADD* and behavioral disorders, *CD* and anxiety disorders are often found to co-exist with *MDD*. Concerning the co-occurrence of anxiety and affective disorders, the DSM-III states that "in some instances prodromal symptoms - eg, generalized anxiety, panic attack, phobias...- may occur over a period of several months" (APA, 1980, p. 216). Although anxiety disorder was not included in the majority of the analysis, there were 5 cases of *MDD+ANX*. A preliminary analysis found that these cases were indistinguishable from *MDD-single* or *MDD+other* disorders. This may be interpreted as the psychometric measures used were not sensitive to these differences or that the disorder of major depression has such a strong penetrance that the symptomatology of these multiple cases are essentially that of a major depressive disorder.

The co-occurrence of *MDD* and *CD* has been well documented (Chiles, Miller, & Cox, 1980; Marriage, *et al.*,1986; Jensen, Burke, & Garfinkel, 1988; Reich, 1985; Politano, Edinger, Nelson, 1989; Puig-Antich, 1982; Puig-Antich, *et al.*, 1989). The DSM-III identifies as one of the age-specific associated features of major depression: "in adolescent boys negativistic or frankly antisocial behavior may appear. Feelings of...restlessness, grouchiness, and aggression are common" (APA, 1980, p. 211). For this study, 32% of the *MDD* group had a secondary diagnosis (19/59); of these 19, 15 (79%) were either *CD* or *OPP*. As with the analysis of multiple diagnoses within the *ADD* group, there was no differences between *MDD alone* versus *MDD+others* subgroups. (The differences found were essentially between *CD-alone* and *MDD-alone* but not with the combined subgroups.) This is inconsistent with the findings of Marriage *et al.* (1986) where the *MDD+CD* group rated themselves more depressed on a self-report depression scale (CDS). However, there was no difference when the *CDI* was used on the same groups. The mean *CDI* scores from the two studies were comparable (Marriage *et al.*: *MDD* alone, 21.15; *CD* alone, 7.93; *MDD+CD*, 11.28. This study: *MDD* alone, 18.54; *CD* alone, 9.11; *MDD+CD*, 17.75).[23] Undoubtedly, the co-occurrence of *MDD* and *CD* will continue to challenge both the clinical and research communities.

The CDI, I-E, and TSCS Scales

The psychometric properties of assessment instruments are crucial to the utility of the information collected by them. There has been increasing use of statistical techniques such as confirmatory factor analysis in the scale development and construct validation phases. Some of the studies using these techniques have criticized the scales used - *CDI*, *I-E*, and *TSCS* - on their factorial validity. Comrey (1988) cautioned that the ready availability of computer programs for sophisticated techniques such as causal modeling may lead to ***inappropriate*** applications of them by researchers. Cole (1987) has similar cautions for the use of conformatory factor analysis (CFA). Although he suggest that CFA can have tremendous utility for test validation research, he argued that CFA is only as useful as the proposed underlying model. Even a particular model may have a good fit, if the model is flawed or misspecified, the estimates may be quite inaccurate. An acceptance of a model must go beyond the statistics to the ***theory***.

It is important to keep in mind that the hypothetical constructs of depression, locus of control and self-esteem have been ***inferred*** from these inventories. A particular scale may only assess part(s) of that construct and should be viewed only as a ***proxy*** measure. The criteria for judging a scale should consider its validity claims with its intended use(s) (American Psychological Association, 1985). For example, the multidimensionality of the construct, such as depression or locus of control, does not ***necessarily*** negate the use of a scale that is unidimensional, such as *CDI*, and *I-E*. On the other hand, even if a particular model concerning a specific number of factors "fits", it does not ***automatically*** mean that the scale or the underlying construct has the specified number of factors.

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[23] When post-hoc analysis used the Duncan multiple test instead of the more conservative Scheffe test, there was a significant difference between *CD* alone and *MDD+CD* for this study.

The cross-scaled factor analyses suggested that the three scales are relatively homogeneous; items from one scale are have more in common with its intended scale (eg *I-E* items with the *I-E* scale) than with other scales (eg. *I-E* items with the *CDI* or *TSCS* scales). Since the total scores from the scales do correlate (eg. depression scores correlate with self-esteem scores), it suggest that it is more the *pattern* of scores rather than the individual items per se that are correlated. Questions regarding the construct validity of depression versus low self-esteem undoubtedly require more in-depth research. At least at the level of analysis in this study, there are no cross-scale contaminations. One can rule out similar item content as a *reason* for the observed correlations between scales.

Children's Depression Inventory

The internal consistency data from this study is consistent with those found in the literature. Factor analytic studies have identified from 2 to 8 factors (Carey, Faulstich, Gresham, Ruggiero, & Enyart, 1987; Helsel & Matson, 1984; Hodges, Siegel, Mullins, & Griffin, 1983; Politano, Nelson, Evans, Sorenson, & Zeman, 1986; Saylor, Finch, Spirito, & Bennett, 1984; Weiss & Weisz, 1988). Different factor structures have been found for normal versus clinical, and children versus adolescent populations. Carey *et al.* were critical of the use of the eigenvalue equal or greater than '1' rule for the number of factors extracted. They used in addition: the scree test and an interpretable simple structure. These rules are also the ones adopted in this study. The two most common factors found across all these studies were an affective and a behavioral factor. The factors identified in this study are consistent with the literature.

Some of the problems of *nonspecificity* of the *CDI* in clinical populations may be related to the items pertaining to the behavioral factor (particularly items 5,26,27). As well, although the *CDI* is intended to measure the *severity* of depressive symptomatology, it has been evaluated for use as a diagnostic tool for depression. This is probably not the best *application* of the scale because presence of *some* depressive symptomatology per se does not necessarily justify an automatic diagnosis of depression. The suggested use of *differential* weights (Lobovits & Handal, 1985) for items may increase the diagnostic utility of self-report scales such as the *CDI*.

Rotter's I-E Scale

The internal consistency data from this study was weaker than Rotter's data. Many studies have been conducted with respect to the factor structure of Rotter's *I-E* scale and of the dimensionality of the locus of control construct. The number of factors extracted ranged from 1 to 9 with the 2-factor solution the most common. The 2-factor solution was chosen for this study. Factor I, concerning political control, is similar to others from the literature. Factor II, concerning passivity, is similar to what others have identified as *general luck* (Marsh & Richards, 1987). The results from using the subscales of Tyler *et al.* (1979), passive agents or victims; and noncontrollable others or powerful others, suggest that this may be a possible compromise for the continued use of the *I-E* scale while acknowledging the *multidimensionality* of both the scale and the locus of control construct.

Tennessee Self Concept Scale

One of the strongest criticism of the *TSCS* is the multiplicity of interpretive scales that can be derived (Wylie, 1979). The use of only *mutually exclusive* scales in this study has circumvented this problem. Previous factor analytic studies tended to use only the eigenvalue equal or greater than '1' rule for factor extraction. This has in some ways perpetuated the over-interpretation problem for the *TSCS*. The strategy used in this study of combining the eigenvalue rule, the scree test, and interpretability for factor extraction seems to be superior. Contrary to previous studies, the subscales from *both* the internal and external frames of reference were replicated. This study did not specifically address the *dual-dimensionality* of each item, that is, each item being classified simultaneously in both internal and external frames of reference. Although both sets of subscales (ie, the 3 x 5 matrix) can be used, a more conservative approach is to use *either* the internal *or* the external in any one particular study.

Group Discriminability

The ability to differentiate among different diagnostic groups is desirable on clinical and theoretical grounds. Multivariate techniques of profile analysis and discriminant analysis have been used in this study to address this question. Univariate analyses were used to provide a more focused analysis. Profile differences can be used to aid in the diagnostic process, help in treatment planning, and further the understanding of the disorder - through the process of searching for similarities and contrasts. This is the type of process suggested by Cantor *et al.* (1980) in their discussion of categorization or classification. For this study, the variables used in the profile are *limited* to self-report data on key emotional/cognitive domains. Undoubtedly, the use of other variables such as background and family dynamics will increase the differentiation of the different groups. Information from discriminant analysis is complementary to those from profile analysis. Discriminant analysis provides information regarding the *accuracy* of group membership given the specified predictor variables. Once discriminant weights have been determined, they can be used to classify new members with *unknown* group membership.

Profile Analyses

The transformation of the raw data into *z*-scores based on the study group was quite revealing for the differentiation of the major diagnostic groups (see Figure 1). Although on measures of depression, self-esteem, and locus of control, clinical groups have been differentiated from the normal populations, the differentiation *among* clinical groups has been less successful. The *z*-score profiles clearly delineated four patterns: *MDD*, *DYS*, *ADD*, and *CD+OPP+VC*. Of these four, the *MDD* is the most distinctive and most severe: they showed the highest level of depression and lowest level of self-esteem. This may in part be due to the *MDD* group being the most severely disturbed; a fact that may be specific to the particular mandate of the centre where adolescents with *severe* problems with substance abuse and/or behavioral control as well as active psychosis are referred elsewhere. The distinctiveness of the *MDD* group can be contrasted to the virtual lack of presence of the other affective group: *DYS*. The data suggested that the *DYS* group can be ranked as being in the *mid-range* of severity/pathology in terms of depression and self-esteem.

The *similarity* of the *CD* and *OPP* groups in these self-report variables cast some doubts to the validity of *OPP* as distinct from *CD*. The *exclusion* of severely conduct disorders adolescents (from the treatment facility) may have contributed to the similarity of these two disorders. That is, a more disturbed group of *CD* adolescents may well show differences on these self-report variables. The similarity of the *VC* group to the *CD+OPP* groups, especially on self-esteem, suggest that the problems of this group is largely *inter*-personal or behavioral. This can be contrasted to the affective group where the disorders have a much larger *intra*-personal focus. Although the *VC* group, by definition, does not have a mental disorder, the presentation of acute depressive symptomatology should be noted by clinicians. The *ADD* group has a combination of behavioral and affective disturbances: showing similarity to both *MDD* and behavioral groups. The complexities of this group's presentation may be the result of years of coping with a *chronic*, sometimes debilitating disorder and poses a challenge for treatment planning.

It is interesting to compare the profiles of the groups using different forms of the *TSCS* data: nontransformed raw scores (Figure 2) versus T-scores (Figure 3). While the nontransformed score profiles showed *Self Sat* to be similar to *Behav* and *Ident* to be the highest, the pattern was different with T-scores.[24] Of the three different type of scores, the T-score is probably least appropriate for two reasons. One, there is the question of appropriateness of the standardization sample for this study. Not only is the norming data quite dated, the population is mostly adults.[25] Two, in terms of profile analysis, it yielded the least amount of differences among groups.

The success of the z-score transformation in generating *distinctive* profiles for the different groups must be viewed conservatively. Since the z-scores or deviation scores are *entirely* dependent on the characteristic cases used, a different sample of adolescents with different pathologies *will* result in a different set of deviation scores. These may or may not yield distinctive profiles. However, if a reasonably large database can be established, one can generate reliable (stable) deviation scores for new cases.

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[24] A comparison of nontransformed raw scores is valid *across* scales because all three has the same maximum (5 x 30 items or 150).

[25] Although there are separate samples of adolescents drawn after the *TSCS* has been published, only sets of means and standard deviations were provided. T-scores conversions were still based on the original 1965 sample.

Discriminant Analyses

The results from discriminant analyses parallel those from the profile analyses. The accuracy rate for predicting the *DYS* group alone was very poor, ranging from 6.7% to 26.7%. When only three composite groups were selected: *MDD*, *CD+OPP*, and *VC*, the overall accuracy rate was quite good, at 64%. This is comparable the finding of Kazdin, Colbus, & Rogers (1986) who used more variables and only two groups: depressed versus non-depressed. They investigated the discriminative power of related variables of depression. Using self-reported measures of depression, hopelessness, self-esteem, and internalizing symptoms, they achieved an accuracy rate of 67.9% between depressed and non-depressed children. Although results from this type of analysis cannot *technically* be compared to sensitivity (true positive) and specificity (true negative) rates for specific disorders, it is useful to examine some of these rates for the detection of depression. Biological indicators such as the DST has a very high specificity rate, usually in the range of 80% - 90%, while scores from self-report such as the *CDI* has more modest rates, usually in the range of 60% - 70%. Sensitivity rates are in the range of 60% - 70% for both types of indicators. For this study, by using a combination of depressive symptomatology, self-esteem and locus of control, the *MDD* group can be discriminated in the range of 67% from behavioral disorders. This range of accuracy is quite acceptable.

It is interesting to note some of the *errors* of classification (see Appendix F). For example, individuals in the *OPP* group were as likely (25%) to be classified as *DYS* or *OPP* (see Table F2). Individuals in the *CD* group were equally likely to be classified as *CD*, or *OPP*, or *VC*. These results complement the finding of similarity among these three groups in the profile analysis. The other interesting misclassification concerns the *MDD* group. When considered with *CD+OPP*, and *VC*, *MDD* was often misclassified in the *CD+OPP* group. This result is consistent with the observation of comorbidity of *MDD* and *CD*. The similarities that led to the misclassifications were *not* due to cases that have both a diagnosis of *MDD* and *CD* because analyses of these mixed cases with *MDD* and *CD* alone cases revealed differences only between the *pure* groups.

Univariate Analyses

The results from the univariate analyses complement those from the multivariate. Univariate ANOVAs were used to investigate any gender and/or gender versus diagnostic group interactions. The gender effects were consistent with those in the literature. Females scored more depressed on the *CDI*, more external on the *I-E*, and less positive on the *Ident* of the *TSCS*. In terms of specific diagnostic group differences, the major differences were between the *MDD* and *CD* groups: the *MDD* was more depressed on the *CDI*, has lower self-esteem (*Self Sat* on the *TSCS*), and tended to endorse proportionally more noncontrollable (versus powerful others) items on the *I-E*. These differences suggest that although the two disorders tend to *coexist*, they are distinctive in certain emotional and social domains. That is, although both groups showed the presence of depressive symptomatology and problems with their self-concepts, they vary in the *level* of disturbance in these areas.

In a discussion of whether to use univariate or multivariate profile analyses, the complex relationships among different variables of interest suggest that profile analyses are more *appropriate* than univariate analyses. Profile analysis is also closer to the somewhat tacit decision-making process involved in diagnosis. A clinician typically considers not just individual signs/symptoms in *isolation* (as in univariate analyses) but considers *patterns* or clusters of symptoms (as in profile analyses). A common example of this process is the analysis of the MMPI by identifying distinctive profiles such as the 2 and 3-point code types (Graham, 1987). Profile analysis provides the *statistical* tool for this important activity.

Relationships Among Depression, Self-Esteem, and Locus of Control

Whereas all the previous sections of this study were focused on differentiations among diagnostic groups, this section focuses more on the relationships of these socio-emotional constructs within a clinical adolescent population. Often, studies have focused on *differences* of these constructs for different pathologies, their *interrelationships* within selected psycholopathogies have received less attention. Self-esteem and locus of control are particularly important for the phenomenon of depression. The relationship of self-esteem in depression has been well established. Similarly, the importance of locus of control has been implicated in Beck's theory. Two results are particularly encouraging: the evidence of self-discrepancy, and the impact of chronicity of depression on self-esteem and locus of control.

Depression and Self-Esteem: Evidence of Self-Discrepancy

In addition to providing measures of different aspects of the self-concept, the *Self Sat* and *Ident* Scales of the *TSCS* has the potential to be used as a proxy measure for the self-discrepancy score as postulated by Higgins. That is, when an individual has a low score on the *Self Sat*, it can be interpreted as *indirect* evidence of a set of high ideals about the self. Score on the *Ident* scale is a reflection of the individual's current or actual self concepts. Analysis of the size of the *Self Sat - Ident* difference among the diagnostic groups can be considered as a comparison of self-discrepancy. The finding that the *MDD* group had one of the largest discrepancy (mean of -13.5) is consistent with the postulate that *actual/ideal* difference is related to the phenomenon of depression.

It is interesting to note that the *ADD* group also has a large discrepancy (mean of -15.7). Inspection of the group means revealed that *ADD* had the second lowest *Self Sat* score while having the highest *Ident* score. The moderate level of depressive symptomatology of the *ADD* group (mean of 12.5) lends support to the relationship between self-discrepancy and depression. However, while the *VC* group also has a moderate level of depression (mean *CDI* of 13.6), its discrepancy score was quite small (mean of -2.4). These findings suggest that this operational definition of self-discrepancy is only ***moderately*** useful. The validity of this claim - ***to use the TSCS scores to generate a self-discrepancy score*** - can be tested by comparing the values obtained with those from Higgins' own Selves Questionnaire (which specifically measures self-discrepancy).

The correlations between *CDI* and *TSCS* variables were consistent with those in the literature citing correlations between measures of depression and low self-esteem (eg, Battle, 1987; Knight, *et al.*, 1988; Kovacs, 1983; Lakey, 1988; Yanish, & Battle, 1985). The magnitude of the correlation is moderated by the use of the full sample rather than limiting it to the affective groups. The use of the full sample is justified in that the purpose is to uncover relationships that might aid diagnosis and classification for the treatment facility. As well, this acknowledges that depressed symptomatology and problems in self-esteem exist in some degree in *all* referred adolescents. Those diagnosed with ***MDD*** or ***DYS*** may have more ***severe*** forms of these problems.

This study did not have a measure of competence, but based on other studies, one can speculate that the referred adolescents likely do ***not*** have a high sense of competence (Blechman, McEnroe, Carella, & Audette, 1986; Kennedy, Spence, & Hensley, 1989; Zimet, & Farley, 1987). A diminished sense of competence likely contributes to an overall diminished self-esteem. The ***TSCS*** measures provide an indication of the adolescents' self-esteem. It is interesting to note that the behavioral groups have the highest level of ***Self Sat*** scores (see Figure 1). This ***may*** be an indicator of the need to exaggerate one's self-worth. Kaplan (1980) has proposed that delinquents suffer from a self-image problem and need to engage in self-enhancing behaviors as a ***self-protective*** measure. In order to test this hypothesis, a further investigation should include interviews with the adolescents to obtain other indicators of level of self-esteem. Synder ***et al.*** (1983) also concurred that active maintenance of a positive self-image (through excuse-making) results from a sensitivity to negative feedback. Zimet & Farley (1987) cautioned clinicians working with emotionally disturbed children to "preserve or develop the child's defenses and confidence and, thereby, to reduce the threat posed by self-disclosure and self-denigration." (p. 37). In a large sample of 800 normal children, measures of defensiveness were found to influence the reporting of self-esteem (Lawton, Fergusson, & Horwood, 1989). As defensiveness increased, there was also a tendency for reported self-esteem to increase. The effect was quite small: defensiveness scores accounted for between 1% and 3% of the variance of self-esteem. These studies all suggest the ***centrality*** of self-esteem in normal, depressed, and ***non-depressed*** clinical populations.

Depression and Locus of Control: Impact of Chronicity

The *I-E* measure has been quite ineffective as a predictor variable for group differences. There was only small variations among the groups on the global I-E score (see Figure 1). There was a notable correlation with depression: feelings of passivity (*PAG*) was positively correlated with severity of depression (*CDI*).[26] Although the correlation is consistent with reported relationships between depression and externality (such as Benassi, Sweeney, & Dufour, 1988), the global *I-E* score was only marginally correlated with *CDI* ($r=.171$, $p=.006$). Part of this is likely due to the attenuation from the use of the full sample rather than the more homogeneous depressed subsample. Benassi *et al*. also found that studies using Rotter's *I-E* and the *BDI* have the smallest effect sizes.

The *lack* of relationship between current depressive symptomatology (*CDI*) and length of depression/dysthymia may be due to a restricted range of the CDI within the affective groups. The analyses of the relationship of the length of the depressive/dysthymic episodes with self-esteem and locus of control were interesting. The positive correlation between *length* of dysthymia (*TDYS*) and feelings of passivity (*PAG*), even after controlling for current level of depression, may be similar to the reported relationship between depression and helplessness. A prospective study simultaneously monitoring passivity and depressive symptoms should tease out the causal linkages.

The lifetime total exposure to depression (*TTMDD*) was negatively correlated with the proportion of noncontrollable items (*PNC*) on the *I-E* regardless of current *CDI* level. This dimension or perspective of the *I-E* scale has not been notable (ie, significant) before; only the self-attribution dimension (namely *PAG*, and *VIC*) has been shown to have significant relationships with the other variables in the study. This finding suggests that the adolescent tended to feel *less* noncontrollable, perhaps more in control, as the length of exposure to depression increases. This may be similar to findings of increased need for control from victims of violent crimes (Janoff-Bulman, 1979). Children and adolescents, especially those who have had traumatic life experiences, often do not have control over large aspects of their lives. The occurrence of *repeated* episodes of depression, regardless of their etiology, must *add* to the sense of noncontrollability. Thus, this finding of perceived control may be a coping mechanism. More in-depth probing should reveal the strength of this perception.

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[26] Although there were correlations with TSCS variables (see Table 14), these became nonsignificant when the level of depression was controlled fc (see Table 15). Therefore, these effects were mediated through depression.

The hypothesis of coping mechanism is more plausible when considered with the finding of a unexpected *positive* correlation between *TTMDD* and *Ident* scale on the *TSCS* when level of depression has been controlled for. This may be similar to the excuse-making phenomenon postulated by Synder *et al* (1983). This finding needs to be replicated with a larger sample and a more rigorous measure of length of depressive episode. If the finding is replicated, it would suggest that there is a difference between depression in adults versus that in adolescents.

Interpretation of the findings with the process variables, *TDYS*, *TMDD*, and *TTMDD*, are difficult. These measures are very *rough* indicators of chronicity. Although there are standardized measures for assessing the duration and frequency of psychopathology (eg, Kiddie-SAD: Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982), they have not used to examine the impact of *chronicity* on socio-emotional indicators. At a more theoretical level, chronicity is often confounded with severity. Although severity of psychopathology can be measured quite easily for a *current* episode, it is very difficult to obtain for previous episodes because of the *retrospective* nature of the design. This is further compounded by the need to rely on secondary sources of information. For children and adolescents, it is often the *parent(s)* that is(are) interviewed with respect to duration and frequency of episodes. The continued refinement of structured interviews for children and adolescents coupled with better understanding of cognitive-emotional development promises to improve the quality of information that can be elicited from children and adolescents (Kovacs, 1986).

Contributions of the Study

The contributions of the study are both conceptual and methodological. The study accorded equal importance to the investigation of the impact of the tools used in the measurements of the constructs in the study as well as the relationships among the constructs themselves. Psychometric properties of reliability and validity of any instrument or scale are *not* static but are affected by the ***appropriateness*** of its use in any particular research situation or question. More specifically, the impact of conceptual overlap of specific constructs on the measurement of each respective constructs is often overlooked. These issues are particularly pertinent for the use of adult-based typology and instruments with adolescents and the investigation of depression and low self-esteem. Although the study can be criticized for the massive amount of data analyses, these ***did*** establish the suitability of the instruments for use in an outpatient adolescent population.

A more design-related issue was the appropriateness of using only the primary DSM-III diagnosis for group placement. The impact of multiple diagnoses on overall symptomatology is usually only addressed when an investigation is specifically focused on the issue of comorbidity. For most other studies, cases are either assigned to different groups based only on the primary diagnosis or the researchers conceptualize disorders only in their 'pure' form - ignoring the whole issue of comorbidity. The finding of *no* impact of multiple diagnoses should *not* be interpreted as support for the existence of 'pure' forms of disorders but rather that based on the self-report measures used, the impact of multiple diagnoses is minimal. Had there been significant and notable differences between single- and multiple-diagnoses cases, the study would have had to use only the single cases.

The use of profile analysis to aid in group identification is not new. The representation of individual cases using deviation scores is also not unique. However, the combination of profile analysis and the use of the concept of deviation scores *across* a number of different groups and different instruments is unique. There is increasing ***acknowledgement*** of the complexities of various psychopathologies. Clinicians and researchers alike have to integrate a whole array of information from diverse sources for purposes of diagnosis and treatment. The use of *z*-scores in profile analysis shows potential as a viable methodology for this process.

Conclusions and Implications

The focus of this study was the cognitive-emotional domains of depression in adolescents. Two other key cognitive-emotional variables, self-esteem and locus of control, were also included. Similar to many other studies, this one used adult-based theories, classification systems, and instruments in these areas and examined their applicability for an adolescent population. Although there is a push to develop specific instrumentations for this age group, much of the work lacks the *accumulated* weight of knowledge gained from earlier instruments. Unless an adult (or existing) tool is flagrantly inappropriate for the adolescent, its use may even be beneficial because of the possibility of successive follow-up into adulthood using the same instrument.[27]

The findings from the study suggest that the utility of several potential tools warrants further investigation. The rating scale promises to be an efficient measure of inter-rater reliability when one has to deal with multiple diagnoses. The use of z-scores and profile analysis may provide a statistical tool and methodology for assisting in the diagnostic process. It reveals patterns that may only have been *implicitly* known and *quantifies* differences among groups. It offers a conceptual framework for dealing with multiple, diverse information simultaneously. The increasing acknowledgement of complexities of psychological constructs pushes the use of multidimensional instruments. Both the *TSCS* and *I-E* scales show the potential to be used in this way. Further validation work is required with different samples.

It is clear from the findings of this study that depression in adolescents share many of the features of adult depression. The co-existence of *MDD* and *CD* is consistent with the stated age-associated behavioral features of major depression in the DSM-III. This has treatment implications for both disorders - complicating the treatment planning for both. Although the study was not designed specifically to investigate the validity of the other disorders, such as *ADD* or *VC*, the discriminability of most of the disorders based on self-report data *alone* offers supporting validity evidence for these disorders.

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[27] Although one can argue that there is a possibility that the same tool may measure different constructs with *age*, this is still likely to be less problematic then when entirely *different* tools are used each time.

This study found some intriguing results for specific diagnostic groups. For example, the possibility that the behavioral groups' healthy self-esteem is really a protective shell or *facade* needs to be tested more thoroughly. It has treatment implications. If this is true, clinicians will have to work through the facade before any real change can be expected in this group. There are some indication that chronicity of depression is associated with a need to be more in control. The issue of control is an important but complicated one. The work of Rothbaum *et al.* (1982) illustrated its complexities and urged the learning of *both* primary and secondary processes in order to stay adaptive. The level of presenting depressive symptomatology of the *VC* group was surprisingly high. In part, this was due to the specific orientation of the treatment facility for dealing with adolescents from severely dysfunctional families; the *VC* group comprised mostly of these adolescents. Nevertheless, the presence of depressive symptomatology in *all* diagnostic groups suggests that treatment needs to first deal with these concerns before other issues can be tackled. Untreated depressive symptoms not only increase the suicidal risk, they also interfer with other phases of treatment.

One of the objectives of diagnostic process is to provide the *best* possible treatment for each specific disorder. This was perhaps a less important activity when there were few treatment options for *any* one particular disorder. However, as the range of successful treatment strategies increases, it is advantageous to obtain the most accurate *differential* diagnosis possible. The results from this study have provided some promising leads. It identified areas of overlap and areas of clear differences of presenting symptomatology for some of the major disorders encountered in adolescent psychopathology. The diagnostic process is a very difficult activity to master. The findings of Cantor *et al.* (1980) suggest that the kind of information needed by a diagnostican differs depending on the level of training and the typicality of the presenting case. The kind of information provided in this study may not be viewed as useful to someone who is an expert in adolescent psychopathology. However, for those who are less knowledgeable, the discriminating information obtained by the self-report scales can be extremely valuable.

This study was made possible because of the availability of a testing program in the particular outpatient facility. This leads to the question of the utility of self-report scales for diagnosis and treatment planning. With the increasing funding pressures experienced by treatment facilities, the resources needed to properly administer and maintain a testing program are strained. Often, prospective scales or instruments are rejected not based on suitability but based on cost factors - such as monetary and time requirements. A valid and reliable self-report instrument, if properly used, can yield valuable information that may take an interviewer or therapist many hours to obtain. The results from this study have demonstrated the utility of self-report scales for diagnostic and treatment purposes. The final choice of instruments should be based on the consideration of the following: the purpose of the assessment, the type of diagnostic differentiation desired, the level of training of the staff responsible for the testing program, the type of instruments available, and lastly the resources available for maintaining a testing program.

Finally, there needs to be more integration of the theoretical work of developmental psychopathologists within the clinical area. For example, one must be mindful that self-schemas established early in an individual's life carries with them *limitations* of that age (Leahy, 1985). As well, the earlier these dysfunctional schemas were established, the more distorted the rest of the individual's schemas would be (due to the accumulated distorting effects of these early ones). If treatment approaches are to be successful, they must take into account these cognitive limitations. The current age of the client is *less* important than the age at which these dysfunctional schemas were established. This postulate is not limited to just depression but can be applied to all psychopathologies.

Table 1

Frequency Distribution of Gender by Diagnostic Group

Gender	1[1]	2	3	4	5	6	7	8	9	10
Male	23	13	1	0	26	13	9	6	4	7
Female	38	17	0	1	9	3	4	3	2	1

Table 1 (con't)

Gender	11	12	13	14	15	16	17	18	19	20
Male	2	1	1	7	4	1	2	4	1	1
Female	2	0	0	4	0	0	0	0	0	2

Table 1 (con't)

Gender	21	Total
Male	2	128
Female	0	86

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[1] 1=MDD, 2=DSY, 3=Bipolar Depressed, 4=Bulimia, 5=CD, 6=OPP, 7=ADD, 8=ANX, 9=ADJ, 10=PSY, 11=SUB, 12=Organic Affective, 13=Organic Personality, 14=VC, 15=Borderline IQ, 16=Mental Retardation, 17=Pervasive Developmental, 18=Axis-II Dev, 19=PERS, 20=Deferred diagnosis, 21=No diagnosis.

Table 2

Mean Age (and Standard Deviation)
by Gender and Diagnostic Group

Gender	1[1]	2	3	4	5	6
Male	15.10 (1.32)	14.57 (1.08)	13.53 (0)	n/a n/a	14.76 (1.18)	14.08 (1.44)
Female	14.89 (1.39)	14.62 (1.35)	n/a n/a	14.26 (0)	15.08 (0.98)	13.74 (1.02)
Total[2]	14.97 (1.36)	14.60 (1.22)	13.53 (0)	14.26 (0)	14.84 (1.13)	14.01 (1.35)

Table 2 (con't)

Gender	7	8	9	10	11	12
Male	13.89 (1.17)	15.39 (1.45)	13.97 (1.81)	15.36 (1.58)	13.80 (0.07)	14.78 (0)
Female	15.10 (2.03)	13.87 (1.56)	14.26 (14.26)	12.70 (0)	15.29 (1.57)	n/a n/a
Total	14.97 (1.36)	14.60 (1.22)	13.53 (0)	14.26 (0)	14.84 (1.13)	14.01 (1.35)

Table 2 (con't)

Gender	13	14	15	16	17	18
Male	15.84 (0)	14.53 (1.35)	15.08 (1.48)	17.65 (0)	13.95 (0.93)	13.65 (1.23)
Female	n/a n/a	13.31 (1.03)	n/a n/a	n/a n/a	n/a n/a	n/a n/a
Total	15.84 (0)	14.08 (1.34)	15.08 (1.48)	17.65 (0)	13.95 (0.93)	13.65 (1.23)

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[1] 1=MDD, 2=DSY, 3=Bipolar Depressed, 4=Bulimia, 5=CD, 6=OPP, 7=ADD, 8=ANX, 9=ADJ, 10=PSY, 11=SUB, 12=Organic Affective, 13=Organic Personality, 14=VC, 15=Borderline IQ, 16=Mental Retardation, 17=Pervasive Developmental, 18=Axis-II Dev, 19=PERS, 20=Deferred diagnosis, 21=No diagnosis.

[2] Please see Table 1 for the number of cases in each category.

Table 2 (con't)

Gender	19	20	21	Total
Male	16.44 (0)	17.00 (0)	16.04 (1.92)	14.72 (1.37)
Female	n/a n/a	14.17 (1.19)	n/a n/a	14.66 (1.37)
Total	16.44 (0)	15.11 (1.84)	16.04 (1.92)	14.69 (1.37)

Table 3

Frequency Distribution of DSM-III Diagnostic Groups

Group	Primary	Secondary	Tertiary
Major Depression (MDD)	61	6	1
Dysthymia (DYS)	30	8	0
Conduct (CD)	35	19	3
Oppositional (OPP)	16	22	1
Attention Deficit (ADD)	13	8	1
Anxiety (ANX)	9	12	0
Adjustment (ADJ)	6	1	0
Psychotic (PSY)	8	1	0
Substance Abuse (SUB)	4	2	3
Organic Brian Synd. (OBS)	2	1	0
V-Codes (VC)	11	20	7
Mental Retardation (MR)	3	1	1
Developmental (Axis-II) (DEV)	4	0	0
Personality Disorders (PERS)	1	0	0
No, Deferred, Others (OTHER)	5	0	0

Table 4

Frequency Distribution of the Number of Diagnoses Within Major Diagnostic Groups

Diagnostic Group	Number of Diagnoses		
	1	2	3
MDD	33 (56%)	23 (39%)	3 (5%)
DYS	12 (40%)	15 (50%)	3 (10%)
CD	18 (51%)	13 (37%)	4 (11%)
OPP	11 (69%)	5 (31%)	0 (0%)
ADD	4 (31%)	9 (69%)	0 (0%)
VC	9 (82%)	2 (18%)	0 (0%)

Table 5

Criteria for Rating Scale for inter-rater agreement of multiple DSM-III Diagnoses

Scale	Criteria[1]
1.	Perfect *match*; all diagnoses including differentials.
2.	Same as 1 except *different* for differentials.
3.	Same as 1 except primary diagnosis not exactly the same, but still in *same* category. For example code of Conduct Disorder, undersocialized versus Conduct Disordered, Socialized.
4.	Primary diagnosis *matches*, but extra secondary diagnoses and/or differentials.
5.	Same as 4 but primary diagnosis in same category only (instead of exact match).
6.	Primary diagnosis matches, but others in different order.
7.	Essentially all diagnoses present but the order scrambled or reversed.
8.	Primary diagnosis only in approximate similar category, eg., Major Depression versus Dysthymia. There are also some *matches* in the other diagnoses.
9.	Same as 8 except other diagnoses are only in approximate similar categories.
10.	No matches at all, all diagnoses different.

---

[1] The criteria can be collapsed into four general categories: (a) *excellent* agreement (points 1,2,3); (b) *good* agreement (points 4,5,6); (c) *poor* agreement (points 7,8); and (d) *no* agreement (points 9,10).

Table 6

Results of Agreement on Diagnoses using the Rating Scale

Rating	Cases	Percentage	Collapsed %
1	47	25	
2	27	14	
3	14	7	47 (excellent)
4	21	11	
5	13	7	
6	8	4	22 (good)
7	11	6	
8	10	5	11 (poor)
9	15	8	
10	22	12	20 (no)

Table 7

Kappa Coefficients for Major Diagnostic Groups

Group[1]	Coefficient	Rating A[2]	Rating B[3]
MDD	0.747	good to excellent	substantial
DYS	0.558	fair	moderate
CD	0.771	excellent	substantial
OPP	0.718	good	substantial
ADD	0.674	good	substantial
VC	0.605	fair to good	moderate
Overall	0.688	good	substantial

---

[1] The calculation is based on only those cases that received a *single* diagnosis by the psychiatrist(s) in any one of the six major groups. This results in the inclusion of 140 cases.

[2] The ratings are based on the recommended levels from the Division of Educational Research (DERS) of the Univ. of Alberta. The ranges for '*poor*' was <.04; for '*fair*' was 0.40-0.59; for '*good*' was 0.60-0.74; and for '*excellent*' was >0.74. These are more conservative than those of Rating B.

[3] These ratings are recommended by Landis & Koch (1977). The ranges for '*moderate*' was 0.41-0.60; for '*substantial*' was 0.61-0.80.

Table 8

Frequency of Multiple Diagnoses* Within Each Major Diagnostic Category

Primary Diagnosis	MDD	DYS	CD	OPP	ADD	VC	Total B**
Secondary							
MDD	0	0	2	0	1	1	4
DYS	0	0	3	0	1	0	4
CD	8	5	0	0	2	0	15
OPP	7	4	3	0	3	1	18
ADD	0	0	4	1	0	0	5
VC	4	6	4	4	1	0	19
Total A***	19	15	16	5	8	2	

Note:

* cases with multiple diagnoses not from these six categories were excluded from this table.

**Total B refers to the number of cases that each major diagnostic category appeared as a secondary diagnosis. For example, MDD appeared 4 times as a secondary diagnosis.

***Total A refers to the number of cases within each major diagnostic category that have multiple diagnoses. For example there are 19 MDD cases that have multiple diagnoses.

Table 9

Scale Reliability

Scale/ Subscale	Mean	SD	# of Items	Alpha
CDI	13.84	8.62	27	.879
I-E	10.53	3.37	23	.550
TSCS Overall P	301.29	36.57	90	.921
TSCS Identity	108.15	14.43	30	.855
TSCS Self Sat.	97.57	15.73	30	.848
TSCS Behav.	95.56	12.46	30	.781
TSCS Phys.	64.50	10.07	18	.812
TSCS M-E	58.51	8.14	18	.679
TSCS Personal	60.00	9.71	18	.797
TSCS Family	57.63	9.10	18	.731
TSCS Social	60.64	8.88	18	.757

Table 10

Principal Component Analysis
Interpretation of Cross-Scaled Factor Analysis: CDI+TSCS+I-E

Three-Factor Solution:

		TSCS Dimensions[1]				
Factor[2]	#of Items with >.40 Loading	Internal		External		# of Items Showing Crossovers[3]
		Scale	# of Items[4]	Scale	# of Items	
TSCS	17	Self Sat.	8/17	Pers Soc	7/17 7/17	0
CDI	20					1(T72:R3C4)
TSCS	15	Ident	9/15	Fam	7/15	0

Five-Factor Solution:

		TSCS Dimensions				
Factor	#of Items with >.40 Loading	Internal		External		# of Items Showing Crossovers
		Scale	# of Items	Scale	# of Items	
TSCS	20	Ident	11	No	n/a	0
CDI	17					0
TSCS	12	No	n/a	Fam	9/12	0
TSCS	9	Self Sat.	7/9	No	n/a	0
TSCS	2	No	n/a	No	n/a	1(C26:disobed)

Seven-Factor Solution:

		TSCS Dimensions				
Factor	#of Items with >.40 Loading	Internal		External		# of Items Showing Crossovers
		Scale	# of Items	Scale	# of Items	
TSCS	24	Ident	13/24	No	n/a	0
CDI	19					0
TSCS	9	No	n/a	Fam	7/9	0
TSCS	10	Self Sat.	6/10	M-E	5/10	0
TSCS	3	Behav	2/2	Pers	2/2	1(C17:fatigue)
TSCS	2	Self Sat.	2/2	M-E	2/2	0
I-E	3					0

---

[1] Please refer to Table 9 for explanation of scale abbreviations and loadings.

[2] A factor is designated to a specific scale when more than half of the items loading on the factor belong to that scale.

[3] This refers to the number of items (with loadings >0.4) that show a higher loading on another scale other than its own. For example, within the CDI factor (factor 2), one item from the TSCS (item 72) showed a higher loading on this than on the TSCS factors.

[4] This refers to the number of items from the specific TSCS subcale that has loadings of at least .4

Table 11

Principal Component Analysis
Interpretation of Cross-Scaled Factor Analysis:
CDI+TSCS

Five-Factor Solution:

Factor[2]	#of Items with >.40 Loading	TSCS Dimensions[1] Internal Scale	# of Items[4]	TSCS Dimensions External Scale	# of Items	# of Items Showing Crossovers[3]
TSCS	21	Ident	12/21	No	n/a	0
CDI	17					0
TSCS	10	Self Sat.	5/10	Fam	8/10	0
TSCS	9	Self Sat.	7/9	No	n/a	0
TSCS	6	Behav	3/5	Fam	4/5	1(C26:disobed)

Seven-Factor Solution:

Factor	#of Items with >.40 Loading	TSCS Dimensions Internal Scale	# of Items	TSCS Dimensions External Scale	# of Items	# of Items Showing Crossovers
CDI	18					0
TSCS	16	Behav	8/16	No	n/a	0
TSCS	8	Behav	4/7	Soc	4/7	1(C22:isolate)
TSCS	9	Ident	5/8	Fam	5/8	1(C26:disobed)
TSCS	9	Self Sat.	6/9	M-E	4/9	0
TSCS	5	Self Sat.	5/5	Fam	3/5	0
TSCS	3	Behav	2/2	Pers	2/2	1(C17:fatigue)

---

[1] Please refer to Table 9 for explanation of scale abbreviations and loadings.

[2] A factor is designated to a specific scale when more than half of the items loading on the factor belong to that scale.

[3] This refers to the number of items (with loadings >0.4) that show a higher loading on another scale other than its own. For example, within the TSCS factor (factor 5), one item from the CDI (item 26) showed a higher loading on this than on the CDI factor.

[4] This refers to the number of items from the specific TSCS subscale that has loadings of at least .4. For example, in the first factor, there were *12 Ident scale items* that showed a loading of at least .4 on this factor.

Table 12

Principal Component Analysis
Interpretation of Cross-Scaled Factor Analysis: CDI+I-E

Five-Factor Solution:

Factor[1]	# of Items with >0.4 Loadings	Interpretation	# of Items Showing Crossovers[2]
CDI	18	Affective	0
CDI	3	Behavioral	0
I-E	5	Political	0
I-E	4		0
CDI	3	School	1(123:grades)

---

[1] A factor is designated to a specific scale when more than half of the items loading on the factor belong to that scale.

[2] This refers to the number of items (with loadings >0.4) that show a higher loading on another scale other than its own. For example, within the CDI factor (factor 2), one item from the I-E scale (item 23) showed a higher loading on this than on the I-E factors.

Table 13

Principal Component Analysis
Interpretation of Cross-Scaled Factor Analysis: TSCS+I-E

Six-Factor Solution:

Factor[2]	#of Items with >.40 Loading	TSCS Dimensions[1] Internal Scale	# of Items[4]	External Scale	# of Items	# of Items Showing Crossovers[3]
TSCS	22	Ident	14/22	Phys	9/22	
				Pers	7/22	0
TSCS	12	No	n/a	Fam	9/12	0
TSCS	9	Self Sat.	5/9	No	n/a	0
		Behav	4/9			
TSCS	5	Behav	4/5	Soc	3/5	0
TSCS	3	Self Sat.	3/3	M-E	2/3	0
I-E	3					0

---

[1] Please refer to Table 9 for explanation of scale abbreviations and loadings.

[2] A factor is designated to a specific scale when more than half of the items loading on the factor belong to that scale.

[3] This refers to the number of items (with loadings >0.4) that show a higher loading on another scale other than its own. For this analysis, there were no items that showed a crossover.

[4] This refers to the number of items from the specific TSCS subscale that has loadings of at least .4. For example, withiun the TSCS factor, there were *14 Ident scale items* that showed a loading of at least .4 on this factor.

Table 14

Pearson Correlation Matrix for CDI, I-E and TSCS Variables

	Tdys	Tmdd	Tumdd	CDI	IE	Pag	Vic	Nc	Po	Ppag	Pvic
Tdys	1.00										
Tmdd	—	1.00									
Tumdd	—	.716 (61)* <.0004#	1.00								
CDI	.205 (30) .139	-.023 (61) .430	.023 (61) .430	1.00							
IE	.149 (30) .217	-.114 (61) .191	-.094 (61) .235	.171 (214) .006	1.00						
Pag	.278 (30) .069	-.080 (61) .271	-.042 (61) .375	.209 (214) .001	.834 (214) **	1.00					
Vic	-.035 (30) .428	-.140 (61) .142	-.119 (61) .181	.071 (214) .153	.784 (214) **	.362 (214) **	1.00				
Nc	.130 (30) .248	-.141 (61) .140	-.169 (61) .096	.137 (214) .022	.884 (214) **	.736 (214) **	.752 (214) **	1.00			
Po	.140 (30) .230	-.064 (61) .313	.059 (61) .325	.151 (214) .014	.698 (214) **	.626 (214) **	.544 (214) **	.335 (214) **	1.00		
Ppag	.266 (30) .077	.079 (61) .273	.097 (61) .229	.089 (214) .097	.058 (214) .199	.539 (214) **	-.511 (214) **	-.010 (214) .440	.099 (214) .074	1.00 **	
Pvic	-.266 (30) .077	-.079 (61) .273	-.097 (61) .229	-.089 (214) .097	-.058 (214) .199	-.539 (214) **	.511 (214) **	.010 (214) .440	-.099 (214) .074	-1.00 (214) **	1.00

*sample size, #p value, ** p<.0004

Table 14 (con't)

	Tdsy	Tmdd	Ttmdd	CDI	IE	Pag	Vic	Nc	Po	Ppag	Pvic
Pnc	-.063	-.084	-.213	-.049	-.120	-.160	-.038	.286	-.731	-.181	.181
	(30)*	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.370#	.261	.050	.240	.040	.009	.291	**	**	.004	.004
Ppo	.063	.084	.213	.049	.120	.160	.038	-.286	.731	.181	-.181
	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.370	.261	.050	.240	.040	.009	.291	**	**	.004	.004
Ident	.060	.153	.163	-.482	-.187	-.234	-.059	-.207	-.058	-.154	.154
(T-sc)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.376	.120	.105	**	.003	**	.195	.001	.198	.012	.012
Self Sat	-.204	.031	-.062	-.375	-.107	-.159	-.022	-.105	-.073	-.122	.122
(T-sc)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.139	.407	.318	**	.059	.010	.374	.062	.144	.037	.037
Behav	-.007	.115	-.087	-.446	-.195	-.254	-.053	-.184	-.114	-.217	.217
(T-sc)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.486	.189	.254	**	.002	**	.222	.003	.048	.001	.001
Total P	-.048	.120	-.004	-.486	-.177	-.230	-.051	-.178	-.089	-.168	.168
(T-sc)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.401	.179	.488	**	.005	**	.231	.005	.099	.007	.007
Ident	.063	.177	.185	-.514	-.169	-.216	-.042	-.198	-.026	-.156	.156
(Raw)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.371	.086	.076	**	.007	.001	.272	.002	.351	.011	.011
Self Sat	-.292	.017	-.072	-.378	-.105	-.161	-.018	-.094	-.089	-.128	.128
(Raw)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.059	.447	.290	**	.062	.009	.396	.086	.097	.031	.031
Behav	.001	.102	-.097	-.460	-.189	-.245	-.054	-.182	-.107	-.206	.206
(Raw)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.499	.217	.229	**	.003	**	.215	.004	.060	.001	.001
Total P	-.082	.117	.005	-.526	-.177	-.239	-.043	-.181	-.085	-.188	.188
(Raw)	(30)	(61)	(61)	(214)	(214)	(214)	(214)	(214)	(214)	(214)	(214)
	.333	.185	.485	**	.005	**	.267	.004	.107	.003	.003

*sample size
#p value
** p<.0004

Table 14 (con't)

	Pnc	Ppo	Ident (T-sc)	Self S (T-sc)	Behav (T-sc)	Tot P (T-sc)	Ident (raw)	Self S (raw)	Behav (raw)	Tot P (raw)
Pnc	1.00									
Ppo	-1.00 (214)* <.0004#	1.00								
Ident (T-sc)	-.060 (214) .190	.060 (214) .190	1.00							
Self S (T-sc)	-.029 (214) .337	.029 (214) .337	.543 (214) **	1.00						
Behav (T-sc)	-.001 (214) .443	.001 (214) .443	.666 (214) **	.627 (214) **	1.00					
Total P (T-sc)	-.047 (214) .245	.047 (214) .245	.827 (214) **	.853 (214) **	.875 (214) **	1.00				
Ident (raw)	-.089 (214) .097	.089 (214) .097	.969 (214) **	.544 (214) **	.656 (214) **	.824 (214) **	1.00			
Self S (raw)	-.014 (214) .420	.014 (214) .420	.519 (214) **	.978 (214) **	.611 (214) **	.838 (214) **	.521 (214) **	1.00		
Behav (raw)	-.014 (214) .422	.014 (214) .422	.656 (214) **	.617 (214) **	.988 (214) **	.857 (214) **	.657 (214) **	.608 (214) **	1.00	
Total P (raw)	-.046 (214) .250	.046 (214) .250	.834 (214) **	.851 (214) **	.862 (214) **	.983 (214) **	.848 (214) **	.849 (214) **	.865 (214) **	1.00

*sample size
#p value
** p<.0004

Table 15

Pearson Correlation Matrix
I-E and TSCS variables
Controlling for CDI Level

	Ident (T-sc)	Self S (T-sc)	Behav (T-sc)	Tot P (T-sc)	Ident (raw)	Self S (raw)	Behav (raw)	Tot P (raw)
IE	-.109 (211)* .056#	-.122 (211) .038	-.048 (211) .245	-.134 (211) .025	-.104 (211) .065	-.096 (211) .082	-.045 (211) .258	-.126 (211) .033
Pag	-.150 (211) .014	-.156 (211) .012	-..89 (211) .099	-.184 (211) .003	-.156 (211) .012	-.130 (211) .029	-.090 (211) .095	-.171 (211) .006
Vic	-.019 (211) .393	.029 (211) .339	.005 (211) .472	-.024 (211) .366	-.007 (211) .462	-.006 (211) .464	.009 (211) .446	-.024 (211) .362
Nc	-.128 (211) .031	-.162 (211) .009	-.059 (211) .198	-.139 (211) .021	-.130 (211) .030	-.150 (211) .014	-.046 (211) .254	-.135 (211) .025
Po	-.018 (211) .399	.017 (211) .403	-.018 (211) .397	-.053 (211) .222	-.007 (211) .458	.061 (211) .190	-.035 (211) .305	-.042 (211) .270
Ppag	-.143 (211) .018	-.127 (211) .033	-.096 (211) .081	-.199 (211) .002	-.166 (211) .008	-.129 (211) .030	-.102 (211) .069	-.187 (211) .003
Pvic	.143 (211) .018	.127 (211) .033	.096 (211) .081	.199 (211) .002	.166 (211) .008	.129 (211) .030	.102 (211) .069	.187 (211) .003
Pnc	.081 (211) .119	-.096 (211) .082	-.051 (211) .230	-.035 (211) .304	-.085 (211) .110	-.133 (211) .026	-.035 (211) .306	-.040 (211) .279
Ppo	.081 (211) .119	.096 (211) .082	.051 (211) .230	.035 (211) .304	.085 (211) .110	.133 (211) .026	.035 (211) .306	.040 (211) .279

*sample size
#p value

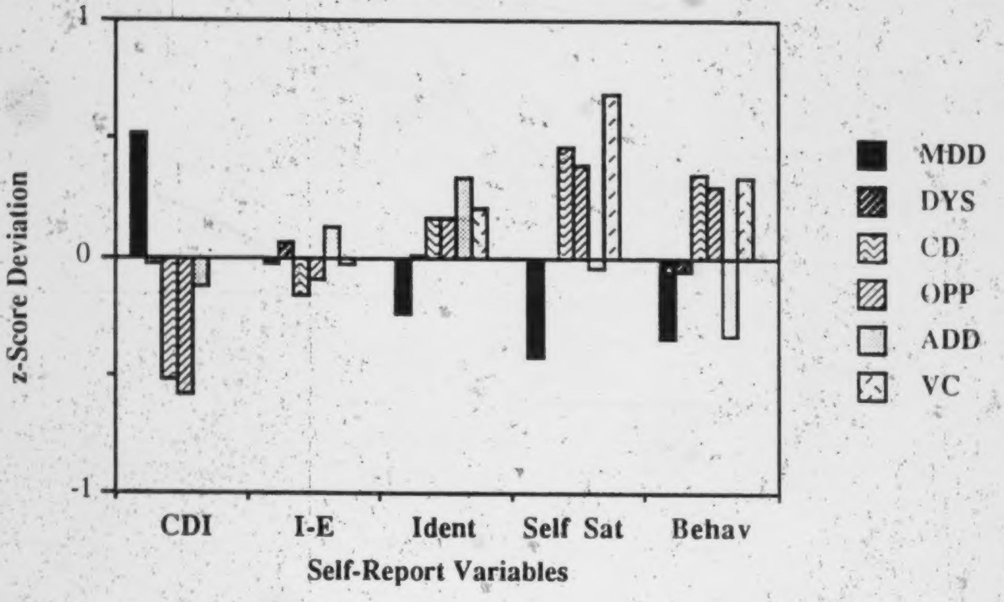

Figure 1 Z-Score Transformation for the Major Diagnostic Groups

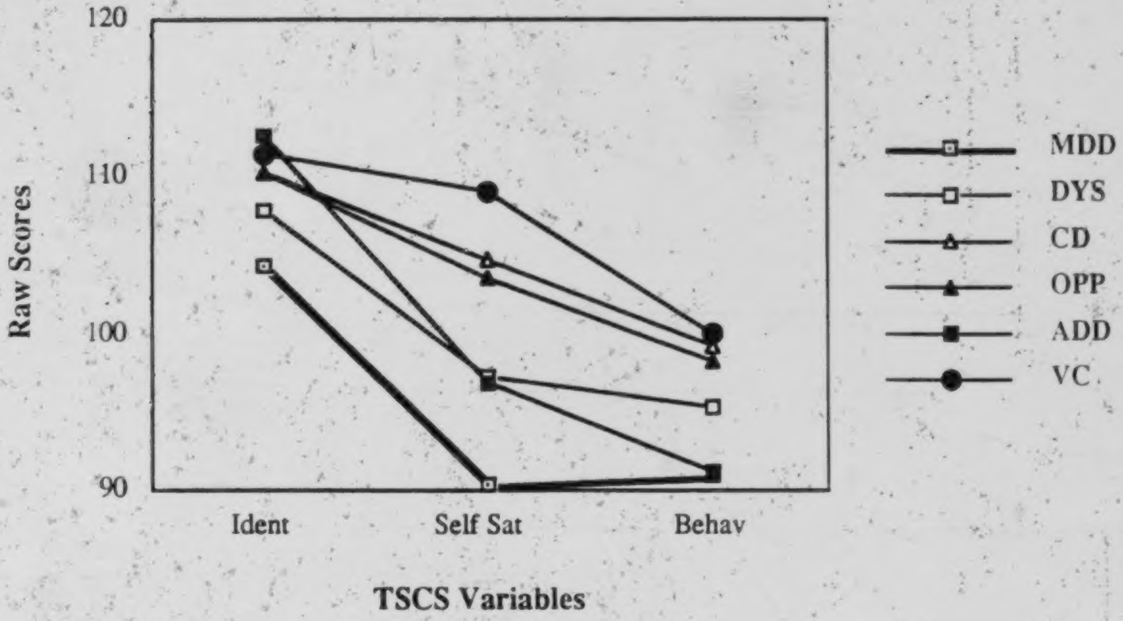

Figure 2 Non-Transformed Scores on the TSCS for the Major Diagnostic Groups

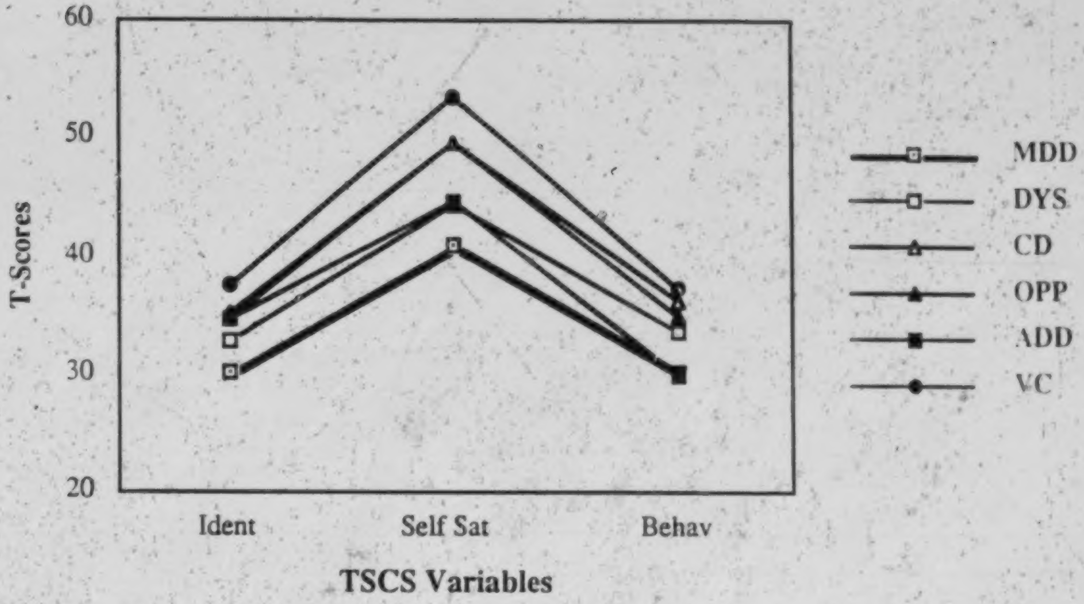

Figure 3 T-scores on the TSCS for the Major Diagnostic Groups

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Appendix A

DSM-III Diagnosis

Table A1

Coding Scheme for DSM-III Diagnosis

Affective and Related Disorders:

Code	Disorder	DSM-III Code
01	MDD, single episode	296.2x
02	MDD, psychotic features	296.24
03	MDD, recurrent	296.3x
04	MDD, in remission	296.26
05	Dysthymia	300.40
06	Cyclothymia	301.13
07	Bipolar, depressed	296.5x
08	Anorexia Nervosa	307.10
09	Bulimia	307.51

Conduct and Behavioral Disorders:

Code	Disorder	DSM-III Code
10	CD: Socialized, Non-aggressive	312.21
11	CD: Socialized, Aggressive	312.23
12	CD: Undersocialized, Non-aggressive	312.10
13	CD: Undersocialized, Aggressive	312.00
14	Oppositional	313.81

Attention Deficit Disorders:

Code	Disorder	DSM-III Code
17	ADD, not specified	--------
18	ADD, with hyperactivity	314.01
19	ADD, without hyperactivity	314.00
20	ADD, residual type	314.80

Anxiety Related Disorders:

Code	Disorder	DSM-III Code
21	Separation Anxiety	309.21
22	Avoidant Disorder	313.21
23	Overanxious Disorder	313.00
24	Panic Disorder	300.01
25	Generalized Anxiety Disorder	300.02
26	Obsessive Compulsive Disorder	300.03
27	Social Phobia	300.23
28	Simple Phobia	300.29
29	Post-Traumatic Stress Disorder	308.30,309.81
30	Agoraphobia	300.21,300.22

Adjustment Disorders:

Code	Disorder	DSM-III Code
31	With Depressed Mood	309.00
32	With Anxious Mood	309.24
33	With Mixed emotional features	309.28
34	With disturbance of Conduct	309.30
35	With Mixed Disturbance of Emotions and Conduct	309.40
36	With Work Or Academic Inhibition	309.23

Table A1 (con't)

Psychotic Disorders:

Code	Disorder	DSM-III Code
41	All subtypes of Schizophrenic Disorders	295's
42	Schizoid Disorder of Childhood or Adolescence	313.22
43	Schizoid Personality Disorder	301.20
44	Schizotypal Personality Disorder	301.22

Substance Abuse Disorders:

Code	Disorder	DSM-III Code
50	Mixed Abuse	305.9x
51	Alcohol Abuse	305.0x
52	Cocaine Abuse	305.6x
53	Cannabis Abuse	305.2x

Organic Brain Syndromes:

Code	Disorder	DSM-III Code
60	Organic Affective Syndrome	293.83
61	Organic Personality Syndrome	310.10

V-Codes:

Code	Disorder	DSM-III Code
70	Parent-child Problem	V61.20
71	Other specified family circumstances	V61.80
72	Borderline Intellectual Functioning	V62.88
73	Phase of life problems	V62.89
74	Other V-Codes	--------

Other Disorders:

Code	Disorder	DSM-III Code
78	Mental Retardation, all levels	317-319
79	Pervasive Developmental Disorder	299.0-299.8

Developmental disorders:

Code	Disorder	DSM-III Code
80	Mixed Specific Developmental	315.50
81	Developmental Reading Disorder	315.00
82	Developmental Arithmetic	315.10
83	Developmental Language	315.31
84	Developmental Disorder, not specified	--------

Personality Disorders:

Code	Disorder	DSM-III Code
85	Borderline Personality Disorder	301.83
86	All other categories	-------

Other Disorders/Problems:

Code	Disorder	DSM-III Code
97	Other diagnosis not included above	-------
98	diagnosis deferred	799.90
99	no diagnosis	V71.09

Table A2

Frequency Distribution For Primary Diagnostic Categories

Data Code[1]	Psychiatrist	Intake
01	48	29
02	2	2
03	8	12
04	3	3
Total MDD (01 to 04):	***61***	***56***
05	30	32
Total DYS (05):	***30***	***32***
06	0	0
07	1	1
08	0	0
09	1	1
10	23	28
11	4	4
12	4	2
13	4	3
Total CD (10 to 13):	***35***	***36***
14	16	21
Total OPP (14):	***16***	***21***
17	0	0
18	4	6
19	5	8
20	4	6
Total ADD (17 to 20):	***13***	***20***
21	5	8
22	1	0
23	2	4
24	0	1
25	1	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
Total ANX (21 to 30):	***9***	***13***
31	2	2
32	0	0
33	1	0
34	0	0
35	2	4
36	1	0
Total ADJ (31 to 36):	***6***	***6***

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[1] Please refer to Table A1 for cross-reference to DSM-III diagnostic categories.

Table A2 (con't)

Data Code	Psychiatrist	Intake
41	6	5
42	2	2
43	0	0
44	0	0
Total PSY (41 to 44):	*8*	*7*
50	2	2
51	0	0
52	0	0
53	2	2
Total SUB (50 to 53):	*4*	*4*
60	1	2
61	1	1
Total OBS (60, 61):	*2*	*3*
70	10	5
71	1	3
72[1]	4	2
73	0	1
74	0	2
Total VC (70,71,73,74):	*11*	*13*
78	1	1
79	2	0
Total MR (78, 79):	*3*	*1*
80	4	3
81	0	0
82	0	0
83	0	0
84	0	0
Total DEV (80 to 84):	*4*	*3*
85	1	1
86	0	0
Total PERS (85, 86):	*1*	*1*
97	0	1
98	3	3
99	2	1
Total Other (97 to 99):	*5*	*5*

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[1] This diagnostic category, Borderline Intellectual Functioning, was not included in the V-Codes group because of the adolescents' possible difficulties in understanding the questionnaires.

Table A3

Frequency Distribution For Secondary Diagnostic Categories

Data Code[1]	Psychiatrist	Intake
01	5	8
03	0	2
04	1	0
Total MDD (01 to 04):	***6***	***10***
05	8	20
Total DYS (05):	***8***	***20***
08	1	1
10	17	16
11	2	2
12	0	2
13	0	2
Total CD (10 to 13):	***19***	***22***
14	22	16
Total OPP (14):	***22***	***16***
18	1	0
19	1	2
20	6	5
Total ADD (17 to 20):	***8***	***7***
21	5	3
22	1	2
23	2	2
24	2	0
25	1	0
26	0	1
29	1	1
Total ANX (20 to 30):	***12***	***9***
31	0	2
35	1	1
Total ADJ (31 to 36):	***1***	***3***
41	1	1
42	0	1
Total PSY (41 to 44):	***1***	***2***
50	2	0
53	0	1
Total SUB (50 to 53):	***2***	***1***
61	1	1
Total OBS (60,61):	***1***	***1***
70	13	16
71	7	7
73	0	1
Total VC (70,71,73,74):	***20***	***24***

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[1] Please refer to Table A1 for cross-reference to DSM-III diagnostic categories.

Table A3 (con't)

Data Code	Psychiatrist	Intake
79	1	1
Total MR (78,79)	***1***	***1***
80	0	2
Total DEV (80 to 84):	***0***	***2***
97	0	2
Total OTHER (97 to 99):	***0***	***2***

Table A4

Frequency Distribution Of Tertiary Diagnostic Categories

Data Code[1]	Psychiatrist	Intake
01	1	1
Total MDD (01 to 04):	***1***	***1***
05	0	3
Total DYS (05):	***0***	***3***
10	3	1
11	0	1
Total CD (10 to 13):	***3***	***2***
14	1	3
Total OPP (14):	***1***	***3***
20	1	1
Total ADD (17 to 20):	***1***	***1***
50	3	0
53	0	1
Total SUB (50 to 53):	***3***	***1***
70	1	2
71	6	10
72	1	2
74	0	2
Total VC (70,71,73,74):	***7***	***14***
79	1	0
Total MR (78,79):	***1***	***0***

---

[1] Please refer to Table A1 for cross-reference to DSM-III diagnostic categories.

Appendix B

I-E Scale Items

Table B1

Rotter's Internal-External Scale

External Alternatives

2a. Many of the unhappy things in people's lives are partly due to bad luck.
3b. There will always be wars, no matter how hard people try to prevent them.
4b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5b. Most students don't realize the extend to which their grades are influenced by accidental happenings.
6a. Without the right breaks one cannot be an effective leader.
7a. No matter how hard you try some people just don't like you.
9a. I have often found that what is going to happen will happen.
10b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11b. Getting a good job depends mainly on being in the right place at the right time.
12b. This world is run by the few people in power, and there is not much the little guy can do about it.
13b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyways.
15b. Many times we might just as well decide what to do by flipping a coin.
16a. Who gets to be the boss often depends on who was lucky to be in the right place first.
17a. As far as world affairs are concerned, most of us are the victim of forces we can neither understand, nor control.
18a. Most people don't realize the extend to which their lives are controlled by accidental happenings.
20a. It is hard to know whether or not a person really likes you.
21a. In the long run the bad things that happen to us are balanced by the good ones.
22b. It is difficult for people to have much control over the things politicians do in office.
23a. sometimes I can't understand how teachers arrive at the grades they give.
25a. Many times I feel that I have little influence over the things that happen to me.
26b. There's not much use in trying too hard to please people, if they like you, they like you.
28b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29a. Most of the time I can't understand why politicians behave the way they do.

Internal Alternatives

2b People's misfortunes results from the mistakes they make.
3a. One of the major reasons why we have wars is because people don't take enough interest in politics.
4a. In the long run people get the respect they deserve in this world.
5a. The idea that teachers are unfair to students is nonsense.
6b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7b. People who can't get others to like them don't understand how to get along with others.
9b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10a. In the case of the well prepared student there is rarely if ever such a thing as unfair test.
11a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
12a. The average citizen can have an influence in government decisions.
13a. When I make plans, I am almost certain that I can make them work.
15a. In my case getting what I want has little or nothing to do with luck.
16b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17b. By taking an active part in political and social affairs the people can control world events.
18b. There is really no such thing as "luck".
20b. How many friends you have depends upon how nice a person you are.
21b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22a. With enough effort we can wipe out political corruption.
23b. There is a direct connection between how hard I study and the grades I get.
25b. It is impossible for me to believe that chance or luck plays an important role in my life.
26a. People are lonely because they don't try to be friendly.
28a. What happens to me is my own doing.
29b. In the long run the people are responsible for bad government on a national as well as on a local level.

Table B2

World and Self Attribution Perspectives of the I-E Scale

World Attribution: Non-Controllable Items (16 items):

2a. Many of the unhappy things in people's lives are partly due to bad luck.
3b. There will always be wars, no matter how hard people try to prevent them.
4b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5b. Most students don't realize the extend to which their grades are influenced by accidental happenings.
6a. Without the right breaks one cannot be an effective leader.
9a. I have often found that what is going to happen will happen.
11b. Getting a good job depends mainly on being in the right place at the right time.
13b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyways.
15b. Many times we might just as well decide what to do by flipping a coin.
16a. Who gets to be the boss often depends on who was lucky to be in the right place first.
18a. Most people don't realize the extend to which their lives are controlled by accidental happenings.
21a. In the long run the bad things that happen to us are balanced by the good ones.
25a. Many times I feel that I have little influence over the things that happen to me.
26b. There's not much use in trying too hard to please people, if they like you, they like you.
28b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29a. Most of the time I can't understand why politicians behave the way they do.

World Perspective: Powerful Others Items (6 items):

7a. No matter how hard you try some people just don't like you.
10b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
12b. This world is run by the few people in power, and there is not much the little guy can do about it.
17a. As far as world affairs are concerned, most of us are the victim of forces we can neither understand, nor control.
22b. It is difficult for people to have much control over the things politicians do in office.
23a. sometimes I can't understand how teachers arrive at the grades they give.

Self Perspective: Passive Agent Items (12 items):

3b. There will always be wars, no matter how hard people try to prevent them.
4b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
6a. Without the right breaks one cannot be an effective leader.
7a. No matter how hard you try some people just don't like you.
10b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11b. Getting a good job depends mainly on being in the right place at the right time.
12b. This world is run by the few people in power, and there is not much the little guy can do about it.
13b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyways.
15b. Many times we might just as well decide what to do by flipping a coin.
16a. Who gets to be the boss often depends on who was lucky to be in the right place first.
22b. It is difficult for people to have much control over the things politicians do in office.
26b. There's not much use in trying too hard to please people, if they like you, they like you.

Self Perspective: Victim Items (10 items):

2a. Many of the unhappy things in people's lives are partly due to bad luck.
5b. Most students don't realize the extend to which their grades are influenced by accidental happenings.
9a. I have often found that what is going to happen will happen.
17a. As far as world affairs are concerned, most of us are the victim of forces we can neither understand, nor control.
18a. Most people don't realize the extend to which their lives are controlled by accidental happenings.
21a. In the long run the bad things that happen to us are balanced by the good ones.
23a. sometimes I can't understand how teachers arrive at the grades they give.
25a. Many times I feel that I have little influence over the things that happen to me.
28b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29a. Most of the time I can't understand why politicians behave the way they do.

Appendix C

Analysis of Multiple Diagnosis

Table C1

Analysis of Variance Tables
Number of Diagnoses As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	5.787	2	2.893	0.039	.962
Error	15542.667	211	73.662		

Variable: IE

Source	SS	DF	MS	F	P
Gr	71.146	2	35.573	3.204	.043
Error	2342.349	211	11.101		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	22.034	2	11.019	2.924	.056
Error	795.257	211	3.769		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	8.939	2	4.470	1.335	.265
Error	706.183	211	3.347		

Variable: NC

Source	SS	DF	MS	F	P
Gr	47.871	2	23.936	4.528	.012
Error	1115.274	211	5.286		

Variable: PO

Source	SS	DF	MS	F	P
Gr	1.641	2	0.821	0.393	.675
Error	440.340	211	2.087		

Table C1 (con't)
Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	45.435	2	22.717	0.150	.861
Error	31874.244	211	151.063		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	45.435	2	22.717	0.150	.861
Error	31874.244	211	151.063		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	297.844	2	148.922	0.965	.383
Error	32563.977	211	154.332		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	297.844	2	148.922	0.965	.383
Error	32563.977	211	154.332		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	88.061	2	44.030	0.489	.614
Error	19006.650	211	90.079		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	68.801	2	34.401	0.274	.761
Error	26498.064	211	125.583		

Table C1 (con't)

Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	387.633	2	193.816	1.729	.180
Error	23653.694	211	112.103		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	51.616	2	25.808	0.298	.743
Error	18329.313	211	86.624		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	844.858	2	422.429	0.326	.722
Error	273603.093	211	1296.697		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	129.310	2	64.655	0.314	.731
Error	43483.793	211	206.084		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	618.314	2	309.157	1.272	.283
Error	51290.920	211	243.085		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	30.919	2	15.459	0.104	.902
Error	31476.357	211	149.177		

Table C2

Two Sample T-Test Tables
Multiple Versus Single Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple	13.554	212	-0.27	.786
Single	13.873			

Variable: IE

Group	Mean	DF	T	P
Multiple	11.000	212	2.32	.021
Single	9.941			

Variable: PAG

Group	Mean	DF	T	P
Multiple	5.634	212	2.16	.032
Single	5.059			

Variable: VIC

Group	Mean	DF	T	P
Multiple	4.625	212	1.40	.163
Single	4.275			

Variable: NC

Group	Mean	DF	T	P
Multiple	7.232	212	2.82	.005
Single	6.343			

Variable: PO

Group	Mean	DF	T	P
Multiple	3.027	212	0.19	.853
Single	2.990			

*Number in Multiple group: 102; Number in Single group: 112

Table C2 (con't)
Variable: Prop PAG

Group	Mean	DF	T	P
Multiple	54.866	212	0.53	.600
Single	53.985			

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple	45.134	212	-0.53	.600
Single	46.015			

Variable: Prop PO

Group	Mean	DF	T	P
Multiple	29.049	212	-1.39	.167
Single	31.399			

Variable: Prop NC

Group	Mean	DF	T	P
Multiple	70.951	212	1.39	.167
Single	68.601			

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple	37.152	212	0.96	.340
Single	35.912			

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple	32.981	212	0.33	.744
Single	32.480			

Table C2 (cont')
Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple Single	46.321 43.667	212	1.84	.068

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple Single	33.402 32.745	212	0.52	.606

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple Single	301.759 298.216	212	0.72	.472

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple Single	107.563 107.794	212	-0.12	.906

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple Single	98.795 95.500	212	1.55	.123

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple Single	95.393 94.912	212	0.29	.773

Table C3

Analysis of Variance Tables: MDD Groups Different Secondary Diagnosis* As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	86.085	3	28.695	0.318	.812
Error	4509.786	50	90.196		

Variable: IE

Source	SS	DF	MS	F	P
Gr	44.376	3	14.792	1.114	.352
Error	663.939	50	13.279		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	7.786	3	2.595	0.688	.563
Error	188.529	50	3.771		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	24.600	3	8.200	2.036	.121
Error	201.400	50	4.028		

Variable: NC

Source	SS	DF	MS	F	P
Gr	24.890	3	8.297	1.344	.271
Error	308.589	50	6.172		

Variable: PO

Source	SS	DF	MS	F	P
Gr	7.454	3	2.485	1.089	.362
Error	114.046	50	2.281		

* Categories are CD, OPP, VC, and none

Table C3 (con't)

Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	797.950	3	265.983	1.346	.270
Error	9881.052	50	197.621		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	797.950	3	265.983	1.346	.270
Error	9881.052	50	197.621		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	934.045	3	311.348	1.720	.175
Error	9052.295	50	181.046		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	934.045	3	311.348	1.720	.175
Error	9052.295	50	181.046		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	62.626	3	20.875	0.389	.761
Error	2680.707	50	53.614		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	171.482	3	57.161	0.568	.639
Error	5036.000	50	100.720		

Table C3 (con't)

Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	52.073	3	17.358	0.189	.903
Error	4582.761	50	91.655		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	49.991	3	16.664	0.221	.881
Error	3762.768	50	75.255		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	1776.894	3	592.298	0.525	.667
Error	56451.939	50	1129.039		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	401.915	3	133.972	0.712	.550
Error	9410.400	50	188.208		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	241.832	3	71.611	0.212	.810
Error	11131.168	50	222.623		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	149.018	3	49.673	0.319	.812
Error	7792.686	50	155.854		

Table C4

Two Sample T-Test Tables: MDD groups
Multiple Versus Single Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple	17.632	50	-0.35	.724
Single	18.546			

Variable: IE

Group	Mean	DF	T	P
Multiple	9.790	50	-1.09	.282
Single	10.909			

Variable: PAG

Group	Mean	DF	T	P
Multiple	4.842	50	-1.74	.088
Single	5.758			

Variable: VIC

Group	Mean	DF	T	P
Multiple	4.368	50	-0.04	.966
Single	4.394			

Variable: NC

Group	Mean	DF	T	P
Multiple	5.895	50	-1.51	.138
Single	6.970			

Variable: PO

Group	Mean	DF	T	P
Multiple	3.316	50	0.31	.756
Single	3.182			

*Number in Multiple group: 19; Number in Single group: 33

Table C4 (con't)
Variable: Prop PAG

Group	Mean	DF	T	P
Multiple	51.193	50	-1.75	.086
Single	58.177			

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple	48.807	50	1.75	.086
Single	41.823			

Variable: Prop PO

Group	Mean	DF	T	P
Multiple	34.916	50	0.89	.380
Single	31.530			

Variable: Prop NC

Group	Mean	DF	T	P
Multiple	65.084	50	-0.89	.380
Single	68.470			

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple	34.526	50	0.95	.347
Single	32.546			

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple	32.158	50	1.03	.310
Single	29.273			

Table C4 (con't)

Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple	42.526	50	0.50	.617
Single	41.152			

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple	31.105	50	0.62	.541
Single	29.576			

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple	293.895	50	1.10	.276
Single	283.364			

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple	107.737	50	1.32	.193
Single	102.636			

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple	93.579	50	0.68	.498
Single	90.667			

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple	92.579	50	0.70	.485
Single	90.061			

Table C5

Analysis of Variance Tables: DYS Groups Different Secondary Diagnosis* As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	122.263	3	40.754	0.889	.462
Error	1054.700	23	45.857		

Variable: IE

Source	SS	DF	MS	F	P
Gr	44.246	3	14.749	1.301	.298
Error	260.717	23	11.336		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	13.000	3	4.333	1.021	.402
Error	97.667	23	4.246		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	4.950	3	1.650	0.622	.608
Error	61.050	23	2.654		

Variable: NC

Source	SS	DF	MS	F	P
Gr	18.383	3	6.128	1.099	.370
Error	128.283	23	5.578		

Variable: PO

Source	SS	DF	MS	F	P
Gr	0.700	3	0.233	0.107	.955
Error	49.967	23	2.173		

* Categories are CD, OPP, VC, and none

Table C5 (con't)
Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	510.431	3	170.144	1.505	.240
Error	2600.824	23	113.079		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	510.431	3	170.144	1.505	.240
Error	2600.824	23	113.079		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	130.837	3	43.512	0.275	.843
Error	3646.758	23	158.555		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	130.837	3	43.512	0.275	.843
Error	3646.758	23	158.555		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	139.117	3	46.370	0.730	.545
Error	1461.550	23	63.546		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	98.491	3	32.830	0.161	.853
Error	2890.917	23	125.692		

Table C5 (con't)
Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	161.663	3	53.888	0.857	.477
Error	1446.633	23	62.897		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	345.324	3	115.108	1.700	.195
Error	1557.417	23	67.714		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	1739.130	3	579.710	0.630	.603
Error	21167.167	23	920.312		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	183.783	3	61.261	0.316	.814
Error	4458.883	23	193.865		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	325.357	3	108.423	0.791	.511
Error	3154.050	23	137.133		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	588.333	3	196.000	1.743	.186
Error	2588.333	23	112.536		

Table C6

Two Sample T-Test Tables: DYS Groups Single Versus Multiple Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple	12.800	25	-0.14	.891
Single	13.167			

Variable: IE

Group	Mean	DF	T	P
Multiple	10.200	25	-1.31	.201
Single	11.917			

Variable: PAG

Group	Mean	DF	T	P
Multiple	5.267	25	-1.47	.154
Single	6.417			

Variable: VIC

Group	Mean	DF	T	P
Multiple	4.667	25	0.00	1.00
Single	4.667			

Variable: NC

Group	Mean	DF	T	P
Multiple	6.400	25	-1.21	.239
Single	7.500			

Variable: PO

Group	Mean	DF	T	P
Multiple	3.533	25	-0.09	.923
Single	3.583			

*Number in Multiple group: 15; Number in Single group: 12

Table C6 (con't)

Variable: Prop PAG

Group	Mean	DF	T	P
Multiple	52.225	25	-1.34	.192
Single	57.823			

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple	47.775	25	1.34	.192
Single	33.918			

Variable: Prop PO

Group	Mean	DF	T	P
Multiple	34.426	25	0.11	.916
Single	33.918			

Variable: Prop NC

Group	Mean	DF	T	P
Multiple	65.572	25	-0.11	.916
Single	66.082			

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple	35.733	25	0.13	.893
Single	35.333			

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple	32.800	25	0.35	.731
Single	31.333			

Table C6 (con't)

Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple	43.867	25	0.36	.722
Single	42.750			

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple	32.400	25	-0.08	.938
Single	32.667			

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple	298.133	25	0.15	.885
Single	296.417			

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple	108.200	25	0.47	.645
Single	105.750			

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple	95.933	25	-0.11	.917
Single	96.417			

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple	94.000	25	-0.06	.955
Single	94.250			

Table C7

Analysis of Variance Tables: CD Groups
Different Secondary Diagnosis* As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	429.864	5	85.973	1.708	.166
Error	1409.694	28	50.346		

Variable: IE

Source	SS	DF	MS	F	P
Gr	40.487	5	8.097	1.032	.418
Error	219.778	28	7.849		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	16.987	5	3.397	1.264	.307
Error	75.278	28	2.689		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	16.997	5	3.399	1.351	.272
Error	70.444	28	2.516		

Variable: NC

Source	SS	DF	MS	F	P
Gr	24.776	5	4.955	1.154	.356
Error	120.194	28	4.293		

Variable: PO

Source	SS	DF	MS	F	P
Gr	4.417	5	0.883	0.771	.579
Error	32.083	28	1.146		

* Categories are MDD, DYS, OPP, ADD, VC, and none

Table C7 (con't)
Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	941.729	5	188.346	1.722	.162
Error	3063.288	28	109.403		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	941.729	5	188.346	1.722	.162
Error	3063.288	28	109.403		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	492.945	5	98.589	1.019	.425
Error	2708.480	28	96.731		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	492.945	5	98.589	1.019	.425
Error	2708.480	28	96.731		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	991.987	5	198.397	2.108	.094
Error	2635.778	28	94.135		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	1372.806	5	274.561	1.793	.147
Error	4287.194	28	153.114		

Table C7 (con't)

Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	1136.637	5	227.328	2.886	.032
Error	2205.833	28	78.780		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	617.507	5	123.501	1.300	.292
Error	2659.111	28	94.968		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	12803.368	5	2560.674	2.571	.049
Error	27884.750	28	995.884		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	2258.438	5	451.688	2.003	.109
Error	6315.444	28	225.552		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	1679.363	5	335.873	2.077	.098
Error	4528.667	28	161.738		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	1003.139	5	200.628	1.588	.196
Error	3537.361	28	126.334		

Table C8

Two Sample T-Test Tables: CD groups
Multiple Versus Single Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple	10.563	32	0.56	.579
Single	9.111			

Variable: IE

Group	Mean	DF	T	P
Multiple	9.250	32	-1.82	.079
Single	10.944			

Variable: PAG

Group	Mean	DF	T	P
Multiple	4.688	32	-1.54	.133
Single	5.556			

Variable: VIC

Group	Mean	DF	T	P
Multiple	3.875	32	-1.55	.132
Single	4.722			

Variable: NC

Group	Mean	DF	T	P
Multiple	6.250	32	-1.97	.057
Single	7.611			

Variable: PO

Group	Mean	DF	T	P
Multiple	2.313	32	-0.98	.335
Single	2.667			

*Number of cases in Multiple group: 16; Number of cases in Single group: 18

Table C8 (con't)

Variable: Prop PAG

Group	Mean	DF	T	P
Multiple Single	54.408 54.434	32	-0.01	.995

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple Single	45.592 45.566	32	0.01	.995

Variable: Prop PO

Group	Mean	DF	T	P
Multiple Single	26.296 26.087	32	0.06	.952

Variable: Prop NC

Group	Mean	DF	T	P
Multiple Single	73.704 73.913	32	-0.06	.952

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple Single	36.563 43.722	32	-2.09	.045

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple Single	31.750 37.889	32	-1.38	.176

Table C8 (con't)

Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple Single	44.313 54.167	32	-3.23	.003

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple Single	33.625 38.611	32	-1.48	.148

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple Single	299.875 327.000	32	-2.41	.022

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple Single	105.188 114.389	32	-1.71	.097

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple Single	98.563 110.000	32	-2.64	.013

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple Single	96.063 102.556	32	-1.65	.108

Table C9

Two Sample T-Test Tables: OPP groups Multiple Versus Single Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple	7.400	14	-0.72	.484
Single	9.636			

Variable: IE

Group	Mean	DF	T	P
Multiple	9.600	14	-0.37	0.718
Single	10.455			

Variable: PAG

Group	Mean	DF	T	P
Multiple	5.000	14	-0.51	.615
Single	5.727			

Variable: VIC

Group	Mean	DF	T	P
Multiple	4.000	14	-0.16	.879
Single	4.182			

Variable: NC

Group	Mean	DF	T	P
Multiple	5.600	14	-0.90	.384
Single	6.909			

Variable: PO

Group	Mean	DF	T	P
Multiple	3.400	14	0.50	.627
Single	3.000			

*Number of cases in Multiple group: 5; Number of cases in Single group: 11

Table C9 (con't)
Variable: Prop PAG

Group	Mean	DF	T	P
Multiple Single	55.838 57.118	14	-0.15	.881

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple Single	44.162 42.882	14	0.15	.881

Variable: Prop PO

Group	Mean	DF	T	P
Multiple Single	37.971 30.868	14	1.35	.199

Variable: Prop NC

Group	Mean	DF	T	P
Multiple Single	62.029 69.132	14	-1.35	.199

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple Single	43.000 37.909	14	1.09	.293

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple Single	41.200 31.818	14	1.51	.153

Table C9 (con't)
Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple Single	49.400 49.546	14	-0.03	.979

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple Single	38.800 33.273	14	1.57	.139

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple Single	324.200 306.364	14	1.07	.301

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple Single	118.000 106.636	14	1.58	.138

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple Single	103.200 103.546	14	-0.05	.963

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple Single	103.000 96.182	14	1.57	.140

Table C10

Analysis of Variance Tables: ADD groups
Different Secondary Diagnosis* As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	40.389	2	20.194	.395	.690
Error	307.167	6	51.194		

Variable: IE

Source	SS	DF	MS	F	P
Gr	18.722	2	9.361	3.092	.119
Error	18.167	6	3.028		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	11.639	2	5.819	3.521	.097
Error	9.917	6	1.653		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	5.556	2	2.778	1.136	.382
Error	14.667	6	2.444		

Variable: NC

Source	SS	DF	MS	F	P
Gr	8.556	2	4.278	1.878	.233
Error	13.667	6	2.278		

Variable: PO

Source	SS	DF	MS	F	P
Gr	2.306	2	1.153	0.522	.618
Error	13.250	6	2.208		

* Categories are CD, OPP, and none

Table C10 (con't)
Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	302.603	2	151.302	1.143	.380
Error	794.448	6	132.408		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	302.603	2	151.302	1.143	.380
Error	794.448	6	132.408		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	55.467	2	27.734	0.155	.860
Error	1075.157	6	179.193		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	55.467	2	27.734	0.155	.860
Error	1075.157	6	179.193		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	9.472	2	4.736	0.213	.814
Error	133.417	6	22.236		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	53.722	2	26.861	0.190	.832
Error	848.500	6	141.417		

Table C10 (con't)
Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	107.000	2	53.500	1.717	.257
Error	187.000	6	31.167		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	56.806	2	28.403	1.146	.379
Error	148.750	6	24.792		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	135.333	2	67.667	0.119	.890
Error	3418.667	6	569.778		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	100.139	2	50.069	0.196	.827
Error	1533.417	6	255.569		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	224.583	2	112.292	1.599	.278
Error	421.417	6	70.236		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	165.889	2	82.944	1.097	.393
Error	453.667	6	75.611		

Table C11

Two Sample T-Test Tables: ADD groups
Multiple Versus Single Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple	12.625	10	-0.32	.759
Single	14.000			

Variable: IE

Group	Mean	DF	T	P
Multiple	11.500	10	1.57	.146
Single	9.500			

Variable: PAG

Group	Mean	DF	T	P
Multiple	5.875	10	1.20	.260
Single	4.750			

Variable: VIC

Group	Mean	DF	T	P
Multiple	4.750	10	0.71	.492
Single	4.000			

Variable: NC

Group	Mean	DF	T	P
Multiple	7.375	10	0.81	.435
Single	6.500			

Variable: PO

Group	Mean	DF	T	P
Multiple	3.250	10	1.05	.319
Single	2.250			

*Number of cases in Multiple group: 8; Number of cases in Single group: 4

Table C11 (con't)
Variable: Prop PAG

Group	Mean	DF	T	P
Multiple	55.566	10	0.01	.996
Single	55.530			

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple	44.434	10	-0.01	.996
Single	44.470			

Variable: Prop PO

Group	Mean	DF	T	P
Multiple	30.147	10	0.80	.442
Single	24.337			

Variable: Prop NC

Group	Mean	DF	T	P
Multiple	69.853	10	-0.80	.442
Single	75.663			

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple	35.125	10	0.48	.639
Single	33.250			

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple	35.250	10	0.32	.755
Single	33.000			

Table C11 (con't)

Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple	42.625	10	-0.61	.558
Single	45.500			

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple	31.250	10	2.29	.045
Single	24.250			

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple	297.625	10	0.47	.652
Single	290.000			

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple	110.250	10	0.11	.915
Single	109.250			

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple	93.750	10	-0.65	.529
Single	98.250			

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple	93.625	10	2.25	.048
Single	82.500			

Table C12

Two Sample T-Test Tables: VC groups Multiple Versus Single Diagnoses

Variable: CDI

Group*	Mean	DF	T	P
Multiple Single	11.000 14.222	9	-0.37	.723

Variable: IE

Group	Mean	DF	T	P
Multiple Single	10.500 10.444	9	0.02	.988

Variable: PAG

Group	Mean	DF	T	P
Multiple Single	5.000 4.222	9	0.50	.629

Variable: VIC

Group	Mean	DF	T	P
Multiple Single	5.000 5.556	9	-0.34	.744

Variable: NC

Group	Mean	DF	T	P
Multiple Single	7.500 7.111	9	0.19	.855

Variable: PO

Group	Mean	DF	T	P
Multiple Single	2.500 2.667	9	-0.14	.891

*Number of cases in Multiple group: 2; Number of cases in Single group: 9

Table C12 (con't)
Variable: Prop PAG

Group	Mean	DF	T	P
Multiple	50.000	9	0.94	.369
Single	42.315			

Variable: Prop VIC

Group	Mean	DF	T	P
Multiple	50.000	9	-0.94	.369
Single	57.685			

Variable: Prop PO

Group	Mean	DF	T	P
Multiple	22.619	9	-0.35	.731
Single	25.958			

Variable: Prop NC

Group	Mean	DF	T	P
Multiple	77.381	9	0.35	.731
Single	74.042			

Variable: TOTP (T-score)

Group	Mean	DF	T	P
Multiple	39.500	9	-0.32	.753
Single	42.889			

Variable: R1 (T-score)

Group	Mean	DF	T	P
Multiple	37.000	9	-0.06	.952
Single	37.778			

Table C12 (con't)

Variable: R2 (T-score)

Group	Mean	DF	T	P
Multiple	51.000	9	-0.32	.759
Single	54.111			

Variable: R3 (T-score)

Group	Mean	DF	T	P
Multiple	31.000	9	-0.67	.519
Single	38.556			

Variable: TOTP (Raw score)

Group	Mean	DF	T	P
Multiple	316.000	9	-0.14	.890
Single	321.222			

Variable: R1 (Raw score)

Group	Mean	DF	T	P
Multiple	114.500	9	0.28	.783
Single	110.667			

Variable: R2 (Raw score)

Group	Mean	DF	T	P
Multiple	107.000	9	-0.18	.860
Single	109.444			

Variable: R3 (Raw score)

Group	Mean	DF	T	P
Multiple	94.500	9	-0.47	.652
Single	101.111			

Table C13

Analysis of Variance Tables: ADD-CD Groups
Different Secondary Diagnosis* As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	91.401	3	30.467	0.694	.565
Error	1053.028	24	43.876		

Variable: IE

Source	SS	DF	MS	F	P
Gr	45.484	3	15.161	2.008	.140
Error	181.194	24	7.550		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	11.663	3	3.888	1.544	.229
Error	60.444	24	2.519		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	10.353	3	3.451	1.243	.316
Error	66.611	24	2.776		

Variable: NC

Source	SS	DF	MS	F	P
Gr	21.401	3	7.134	1.712	.193
Error	100.028	24	4.168		

Variable: PO

Source	SS	DF	MS	F	P
Gr	3.607	3	1.202	0.735	.541
Error	39.250	24	1.635		

* Gr 1: CD+ADD; Gr 2: ADD+CD; Gr 3: CDsingle; Gr 4: ADDsingle

Table C13 (con't)
Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	129.849	3	43.283	0.423	.739
Error	2458.910	24	102.455		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	129.849	3	43.283	0.423	.739
Error	2458.910	24	102.455		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	87.440	3	29.147	0.229	.876
Error	3058.055	24	127.419		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	87.440	3	29.147	0.229	.876
Error	3058.055	24	127.419		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	680.353	3	226.784	2.319	.101
Error	2347.361	24	97.807		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	336.401	3	112.134	0.717	.552
Error	3754.278	24	156.428		

Table C13 (con't)
Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	636.179	3	212.060	2.360	.097
Error	2156.500	24	89.854		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	968.329	3	322.777	3.269	.039
Error	3338.107	24	98.741		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	8118.214	3	2706.071	2.609	.075
Error	24896.750	24	1037.365		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	334.829	3	111.610	0.528	.667
Error	5075.028	24	211.460		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	1180.929	3	393.643	2.429	.090
Error	3889.750	24	162.073		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	1814.484	3	604.828	4.553	.012
Error	3188.194	24	132.841		

Table C14

Analysis of Variance Tables: CD-MDD Groups Different Secondary Diagnosis* As Between Group Factor

Variable: CDI

Source	SS	DF	MS	F	P
Gr	1177.365	3	392.455	5.392	.002
Error	4294.355	59	72.786		

Variable: IE

Source	SS	DF	MS	F	P
Gr	36.723	3	12.241	1.013	.393
Error	712.705	59	12.080		

Variable: PAG

Source	SS	DF	MS	F	P
Gr	9.440	3	3.147	0.901	.446
Error	206.116	59	3.494		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	8.346	3	2.782	0.703	.554
Error	233.654	59	3.960		

Variable: NC

Source	SS	DF	MS	F	P
Gr	26.046	3	8.682	1.468	.233
Error	348.939	59	5.914		

Variable: PO

Source	SS	DF	MS	F	P
Gr	2.817	3	0.937	0.500	.684
Error	110.618	59	1.875		

* Gr 1: MDD+CD; Gr 2: CD+MDD; Gr 3: MDDsingle; Gr 4: CDsingle

Table C14 (con't)

Variable: Prop PAG

Source	SS	DF	MS	F	P
Gr	306.770	3	102.257	0.529	.664
Error	11407.586	59	193.349		

Variable: Prop VIC

Source	SS	DF	MS	F	P
Gr	306.770	3	102.257	0.529	.664
Error	11407.586	59	193.349		

Variable: Prop NC

Source	SS	DF	MS	F	P
Gr	318.639	3	106.213	0.725	.541
Error	8641.899	59	146.473		

Variable: Prop PO

Source	SS	DF	MS	F	P
Gr	318.639	3	106.213	0.725	.541
Error	8641.899	59	146.473		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	1543.392	3	514.464	7.501	.0002
Error	4044.354	59	68.548		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	828.064	3	276.021	2.553	.064
Error	6378.349	59	108.108		

Table C14 (con't)

Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	2229.169	3	743.056	7.217	.0003
Error	6074.546	59	102.958		

Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	999.355	3	333.118	3.638	.018
Error	5402.296	59	91.564		

Variable: TOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	23195.223	3	7731.741	50673	.0006
Error	68361.761	59	1158.674		

Variable: R1 (Raw score)

Source	SS	DF	MS	F	P
Gr	1554.854	3	518.285	2.695	.054
Error	11341.749	59	192.233		

Variable: R2 (Raw score)

Source	SS	DF	MS	F	P
Gr	4875.012	3	1625.004	7.170	.0003
Error	13372.418	59	226.651		

Variable: R3 (Raw score)

Source	SS	DF	MS	F	P
Gr	1928.084	3	642.695	3.928	.013
Error	9653.630	59	163.621		

Appendix D

Individual and Cross-Scale Factor Analysis

Suitability of Self-Report Scales for an Adolescent Population - Factor Analysis

Several criteria were used to determine the final number of factors: the scree test, results from the literature, and above all the interpretability of the factors. Two different rotations were used on the final number of factors extracted: varimax and oblique. The factors from the varimax rotation are orthogonal to each other, that is, there is minimal correlation among the factors. However, for oblique rotations, the factors can be correlated.

The cut-off for inclusion of an item for a particular factor was a loading of at least 0.3 on only one factor and minor loadings on others. An item with two loadings of at least 0.3 might still be used provided that one of the loadings is considerably larger than the other (such as 0.65 and 0.35). The item would then be counted with the larger loading factor. For factor interpretation, it was often clearer when only items with at least 0.4 loadings were considered.

Factor analysis was performed on the entire sample as well as for males and females. Generally, the factor solutions for the male and female subsamples were not as stable and interpretable as those for the entire sample. As well, for some of the analyses, the relatively small female sample (85) made factor analytic techniques inappropriate (such as for the *TSCS* test). Thus, only the results from the entire sample would be presented.

CDI Results

From the principal component method, the initial factor analysis revealed 8 factors accounting for 61% of the variance. The first factor accounted for 26% of the variance while three others have at least 5%. The scree plot of the eigenvalues suggested a 2-factor solution which would have only accounted for 33% of the variance. However, the 4-factor solution was more interpretable as well as accounting for a higher percentage of the variance (total 44.4%) (see Appendix D, Table D1). The results from the varimax rotation would be presented first. *Factor I* reflects sadness and general anhedonia (high loadings from items 10,1,11, and 9). *Factor II* reflects isolation and loneliness (high loadings from items 22,12,4,and 21). *Factor III* reflects oppositional and self-blaming behaviors (high loadings from items 5,8, and 26).

Factor IV reflects problems in school (high loadings from items 15 and 23).

Results from the oblique rotation is quite similar. The interpretation of the factors in the 4-factor solutions are the same although the order of the factors and the loadings were slightly different. *Factor I* still reflects sadness and general anhedonia (high loadings from items 10,1,9,11, and 7). *Factor II* reflects oppositional and self-blaming behaviors (high loadings from items 5,8,26, and 3). Although the items were the same as from the varimax rotation, all the loadings were negative. *Factor III* reflects problems in school (high loadings from items 15 and 23). *Factor IV* reflects isolation and loneliness (high loadings from items 22,12,4, and 21).

Results from the principal axis extraction was quite different. Only two factors were extracted with eigenvalues greater than 1; accounting for 28% of the variance. Both rotations yielded very similar factors and loadings. *Factor I* reflects general anhedonia and social isolation (high loadings from items 4,11,20,10,24,17,21,9,12, and 22). *Factor II* still reflects oppositional and self-blaming behaviors (high loadings from items 5,8,26, and 27).

I-E Results

Initial principal component factoring yielded 10 factors accounting for 61% of the variance. The first factor accounted for 10.7% of the variance while 7 more accounted for at least 5% of the variance. The scree plot suggests the extraction of four factors which would account for 30% of the variance. However, the literature would suggest a 2-factor solution (see Appendix D, Table D2). When the 2-factor solution was compared to that of the 4-factor solution, the pattern of loadings was similar for both factors. The *2-factor* solution was chosen over the other. Both the varimax and the oblique rotations resulted in the *same* loadings. *Factor I* received high loadings from items 17,12,18,26,28,22,25. *Factor II* received high loadings from items 11,16,15,10. The variance accounted for by these two factors was 18%. Although Factor I contains items dealing with issues of control about the world as well as the self, it seems to deal more with feelings of externality about *world* or *political affairs*. *Factor II* seems to contain items dealing with feelings of *passivity* about the self.

Principal axis analysis resulted in only *one* general factor using the eigenvalue criterion. The high loadings were from items 18,12,15,16,17,and 25. When a two-factor solution was imposed on the data, the pattern of loadings was essentially the same for both kinds of rotations. These patterns matched those from the principal component analysis.

TSCS Results

Initial principal component analysis extracted 27 factors accounting for 69% of the variance. The first factor accounted for 15% of the variance with only one other factor accounting for at least 5% of the variance. The scree plot suggested two breaks at either 6 or 8 factors. According to Fitts and other research on the *TSCS*, there are several sets of factors that are of interest. Based on these considerations, four different sets of solutions were performed: three, five, eight, and fifteen factors (see Appendix D, Table D3 for the 5-factor solution). Both the varimax and oblique rotations were attempted on each of these solutions. The oblique rotation was not stable for any of the four solutions. Only the results of the varimax rotations would be presented.

According to Fitts, each item has both an internal and external frame of reference (for example, item 1 belongs both to Row 1 and Column A or *Identity* and *Physical Self*). Interpretation would be based on these two frames of reference.

Table D4 summarized the different factor solutions with their accompanying interpretations. Overall, the three scales within the *internal* dimension were reasonably reproduced. The strongest and most consistently expressed scale was the *Ident Scale*. For the external dimension, only four out of the five scales were reasonably reproduced. The strongest and most consistently expressed was the *Family Self* Scale. The weakest scale seemed to be the *Personal Self* Scale. It was only expressed in the fifteen factor solution.

In terms of the choice of the factor solutions, the five-factor solution seems to be the best. It reproduced the *most* number of scales in both dimensions without extracting *trivial* factors. Both the eight and fifteen factor solutions tended to fragment the scales resulting in many factors that contain no specific interpretable patterns. The three factor solution was too overinclusive, which also created factors that contain no specific interpretable patterns.

Very similar results were obtained from the principal axis analysis of the *TSCS*. The initial analysis produced 18 factors. However, this solution was unstable under the iterative procedure. This procedure eventually resulted in a stable 14-factor solution. As with the principal component analysis, the oblique rotation was not stable for any of the factor solutions. Thus, only the varimax rotation results would be presented. As with the principal component analysis, all three scales for the internal dimension were reasonably reproduced. All scales for the external dimension with the exception of the ***Personal Self*** Scale were reasonably reproduced. Finally, the 5-factor solution was the best in terms of maximizing the number of scales reproduced and minimizing the number of trivial factors extracted.

Table D1

Principal Component Analysis CDI Scale
Varimax Rotation
Four Factor Solution Factor Loadings

Item	Com	**Fact 1**	Fact 2	Fact 3	Fact 4
C10	673	**813**	035	-026	097
C01	591	**706**	101	258	123
C11	601	**659**	280	240	169
C09	433	**620**	178	131	-003
C07	565	**580**	213	426	-033
C20	388	(418)	(417)	033	197
C14	317	361	325	286	-012
C13	202	311	040	099	307
C19	163	211	192	-209	193
			Fact 2		
C22	544	-037	**730**	-026	090
C12	544	153	**698**	040	-180
C04	526	387	**590**	129	107
C21	396	131	**510**	123	321
C24	309	(336)	(398)	105	162
C18	154	130	336	036	150
				Fact 3	
C05	574	122	088	**742**	-027
C08	538	218	-176	**668**	116
C26	396	-019	-040	**585**	227
C03	513	343	282	**536**	166
C27	452	-036	407	**520**	117
C06	476	312	(386)	(454)	-153
C02	432	277	(384)	(408)	203
C25	435	240	(402)	(436)	-160
C16	245	164	302	303	189
					Fact 4
C15	550	044	041	083	**735**
C23	541	050	117	199	**697**
C17	405	(393)	213	-121	(437)
Eigenvalues		7.03	1.88	1.58	1.47
%Variance		13.63	12.17	11.56	6.95

Notes:

1. All commonalities and factor loadings are shown without decimals. For example, for item C10, the commonality is 0.673 and the loading on Fact 1 is 0.813.
2. Loadings in **boldface** are considered to be part of the specified factor; items with loadings in parenthesis reflect loadings in more than one factor and are not considered in any factor.

Table D2

Principal Component Analysis I-E Scale Two Factor Solution Varimax Rotation Factor Loadings

Item	Comm	**Fact 1**	Fact 2
I17	386	**620**	-040
I12	344	**586**	031
I18	269	**484**	187
I26	230	**475**	-070
I28	188	**431**	051
I22	193	**430**	091
I25	197	**419**	146
I29	171	371	-181
I04	055	188	140
			Fact 2
I11	338	-027	**581**
I16	350	156	**571**
I15	352	170	**569**
I10	271	-194	**483**
I06	136	097	355
I20	089	-005	298
I09	117	-197	279
I05	099	173	262
I02	100	185	258
I07	070	065	256
I23	120	244	247
I13	044	052	202
I03	024	015	155
I21	004	024	-057
Eigenvalues		2.46	1.69
% variance		9.47	8.57

Notes:

1. All commonalities and factor loadings are shown without decimals. For example, for item I17, the commonality is 0.386 and the loading on Fact 1 is 0.620.

2. Loadings in **boldface** are considered to be part of the specified factor.

Table D3

Principal Component Analysis TSCS Scale
Varimax Rotation
Five Factor Solution Factor Loadings

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5
T41	492	**680**	108	070	-063	095
T14	539	**627**	189	126	-019	307
T22	460	**624**	163	097	183	-041
T42	398	**551**	187	143	176	-087
T03	396	**542**	163	185	-092	181
T09	532	**517**	150	352	-080	334
T04	293	**511**	-027	042	170	-022
T37	393	**507**	320	110	008	148
T06	273	**487**	026	104	124	-094
T10	269	**486**	038	108	141	002
T46	379	**479**	009	129	271	243
T76	293	**472**	211	089	123	-051
T24	277	**472**	129	044	188	-011
T01	382	**439**	266	291	-150	108
T47	365	**425**	319	-078	149	233
T43	428	(419)	293	118	072	(385)
T74	219	**412**	128	-176	-018	042
T07	263	**403**	210	101	-124	173
T48	339	**401**	035	-170	295	248
T16	239	(377)	144	039	037	(272)
T19	269	(361)	(315)	182	031	-074
T83	337	345	259	-161	253	246
T59	224	342	2234	-116	207	-029
T08	264	(340)	205	127	-104	(283)
T39	284	(339)	(330)	040	201	133
T40	201	305	219	226	095	-021
T88	153	297	173	-067	121	126
T50	179	267	056	194	137	218
T12	107	238	025	175	095	102
T86	097	211	182	030	123	055
T49	128	205	067	-085	204	181
T18	097	199	-107	113	119	137
T51	065	191	-004	006	128	-112
			Fact 2			
T15	388	156	**594**	-041	053	077
T33	430	137	**588**	223	014	-124
T87	430	196	**572**	-114	077	212
T85	382	024	**560**	203	152	053
T73	369	246	**548**	036	081	-007
T13	547	(422)	(494)	211	-088	270
T36	431	140	(475)	099	(415)	059
T78	351	285	**461**	-159	178	006
T56	375	(352)	(460)	158	-115	033
T02	261	240	**419**	165	007	-024
T71	177	066	-330	-227	102	046
T05	155	215	312	094	-035	031
T80	288	257	288	-057	260	261
T75	137	085	255	-202	-062	139
T68	108	077	241	124	-098	138

Table D3 (con't)

Item	Com	Fact 1	**Fact 2**	Fact 3	Fact 4	Fact 5
				Fact 3		
T57	449	142	110	**615**	-135	143
T55	466	149	170	**607**	-216	011
T69	398	180	104	**585**	111	-011
T72	509	191	-270	**570**	246	-120
T61	535	146	-052	(526)	071	(478)
T60	461	275	069	**517**	285	-180
T23	363	147	259	**482**	174	-110
T70	311	067	007	**471**	279	081
T32	328	196	313	**417**	081	108
T11	355	299	-212	**411**	172	150
T31	176	-034	126	390	-066	050
T21	279	049	286	367	204	-138
T20	205	-102	008	356	012	-261
T67	276	017	332	343	163	146
T58	200	195	223	324	-088	006
T90	168	146	183	-265	160	133
					Fact 4	
T30	377	110	067	041	**598**	-034
T28	418	212	166	107	**577**	040
T66	432	051	-023	-060	**554**	345
T35	331	-118	034	219	**496**	-145
T34	346	-135	279	115	**481**	-077
T53	303	-002	120	210	**472**	-147
T52	293	277	035	-037	**460**	050
T82	292	151	109	-163	**406**	257
T54	247	264	030	115	**400**	058
T65	269	-031	-084	-195	367	297
T84	297	229	146	-212	365	212
T64	203	128	-202	153	343	065
T38	213	147	297	-055	314	-033
T17	148	141	-061	060	306	165
T89	099	006	175	047	227	122
						Fact 5
T26	348	-087	135	-107	172	**530**
T29	283	-107	-006	-158	075	**491**
T45	394	287	111	237	130	**476**
T79	291	208	020	-147	-018	**474**
T27	347	-106	231	255	023	**466**
T63	465	223	-178	(418)	056	(454)
T62	396	-029	021	(407)	210	(431)
T44	193	176	-047	-031	-115	381
T81	317	304	281	108	000	367
T25	230	122	172	218	136	345
T77	080	138	154	-044	-034	-184
Eigenvalues		13.45	4.40	3.83	3.24	2.64
% variance		14.90	4.90	4.30	3.60	2.90

Notes:

1. All commonalities and factor loadings are shown without decimals. For example, for item T41, the commonality is 0.492 and the loading on Fact 1 is 0.680.
2. Loadings in **boldface** are considered to be part of the specified factor; items with loadings in parenthesis reflect loadings in more than one factor and are not considered in any factor.

Table D4

Interpretation of the TSCS Factor Analysis Principal Component Varimax Rotation

Three-Factor Solution:

Factor	#of Items with >.40 Loading	Internal[1]		External	
		Scale	# of Items[2]	Scale	# of Items
1	24	Identity	13/24	None	n/a
2	9	None	n/a	Family	7/9
3	7	Self Sat.	6/7	None	n/a

Five-Factor Solution:

Factor	#of Items with >.40 Loading	Internal		External	
		Scale	# of Items	Scale	# of Items
1	17	Identity	11/17	Phys	8/17
2	7	Behav	4/7	Social	4/7
3	8	None	n/a	Family	6/8
4	8	Self Sat.	4/8		
		Behav	4/8	M-E	4/8
5	5	Self Sat.	5/5	M-E	3/5

Eight-Factor Solution:

Factor	#of Items with >.40 Loading	Internal		External	
		Scale	# of Items	Scale	# of Items
1	6	None	n/a	Phys	5/6
2	7	Behav	3/7	Family	7/7
3	6	Identity	5/6	None	n/a
4	5	Behav	3/5	None	n/a
5	7	Self Sat.	6/7	None	n/a
6	5	Self Sat.	5/5	M-E	3/5
7	3	None	n/a	None	n/a
8	1	None	n/a	None	n/a

---

[1] Internal and External refers to the frames of reference for the TSCS. The *three* scales within the Internal frame are: Identity, Self Satisfaction and Behavioral. Each scale has 30 items. The *eight* scales within the External frame are: Physical, Moral-Ethical, Personal, Family and Social. Each scale has 18 items. A factor is only labeled with a specific scale (eg. Identity) when more than half of its items (over 0.4 loading) belongs in one scale. Otherwise, "None" is entered.

[2] This refers to the number of items over 0.4 loading that belongs to the specific scale. For example, for Factor 1, there are 13 items from the Identity Scale that has a loading of over 0.4

Table D4 (con't)

Fifteen-Factor Solution:

Factor	#of Items with >.40 Loading	Internal		External	
		Scale	# of Items	Scale	# of Items
1	8	None	n/a	Phys	7/8
2	6	Identity	6/6	None	n/a
3	7	Behav	4/7		
		Identity	3/7	Family 7/7	
4	4	Identity	3/4	None	n/a
5	4	Self Sat.	4/4	None	n/a
6	6	Self Sat.	6/6	M-E	4/5
7	5	Behav	3/5	M-E	4/5
8	2	Self Sat.	2/3	None	n/a
9	2	Behav	2/2	Personal	2/2
10	3	Behav	3/3	Social	3/3
11	3	Behav	3/3	Personal	2/3
12	3	None	n/a	M-E	3/3
13	2	Identity	2/2	None	n/a
14	2	None	n/a	Family	2/2
15	1	None	n/a	None	n/a

Table D5

Principal Component Analysis
TSCS + CDI + I-E Scales
Seven Factor Solution Varimax Rotation
Factor Loadings

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5	Fact 6	Fact 7
T13	536	**689**	-072	160	-011	168	040	002
T87	425	**576**	-050	-200	191	-036	-044	-105
T56	460	**573**	-023	128	-028	052	-222	-250
T15	386	**554**	103	-050	129	015	-121	184
T01	364	**538**	-120	207	-088	037	056	-075
T41	406	**535**	-181	044	-008	207	198	-053
T47	475	**529**	-191	-075	268	-006	163	-234
T43	435	**521**	-155	123	151	170	212	-168
T09	582	**511**	-255	304	-029	099	293	-258
T73	327	**498**	-085	-018	149	050	-216	009
T14	563	(490)	-174	107	065	(433)	119	-274
T33	427	**488**	102	221	054	-028	-354	-004
T37	410	**482**	-322	033	052	244	008	-100
T81	316	**468**	-071	110	087	052	178	-193
T07	282	**466**	-102	066	-048	-026	161	-145
T03	413	**455**	-217	124	-042	272	129	-226
T22	369	**450**	-223	083	214	229	040	100
T19	315	**446**	-215	150	006	082	-145	139
T02	260	**440**	-030	121	043	103	-156	116
T78	340	**431**	-037	-165	256	160	-171	071
T39	332	**419**	-265	-006	249	048	048	140
T32	359	(417)	-066	(404)	095	-058	040	051
T80	323	**415**	032	-002	345	137	090	056
T42	309	**408**	-268	120	172	147	-050	045
T08	252	**403**	-171	066	-079	144	167	-027
T58	239	**400**	-032	257	-064	-075	023	041
T85	294	397	-048	161	170	013	-248	134
T05	208	389	-140	045	004	-014	-018	185
T83	379	383	-118	-168	362	116	080	-199
T76	273	366	-285	017	128	189	-075	-009
T45	352	340	-033	241	174	217	310	-058
T40	185	347	-151	166	110	-027	-035	029
T16	253	344	-079	-010	129	208	133	-226
T24	251	335	-214	028	189	224	-017	079
T25	281	315	032	250	205	013	276	007
T46	390	308	-162	206	303	270	183	-169
T59	267	299	-186	-128	219	206	-080	174
T68	100	268	-013	091	-097	005	-014	099
T75	190	267	-013	-233	038	-041	-062	-239
T88	203	247	-181	-116	139	273	002	-035
T12	157	222	-093	184	147	-071	144	-132
			Fact 2					
C11	568	-061	**708**	001	-023	-174	-054	170
C03	488	-063	**662**	-180	-059	-051	089	002
C07	521	-269	**639**	-052	-015	-104	-084	151
C02	414	-180	**614**	-014	011	005	059	040
C04	473	-169	**609**	055	-099	-246	020	-006
C01	440	011	**607**	-148	-040	-193	027	101
C06	440	-132	**596**	027	-210	095	038	107
C25	439	-200	**580**	-006	099	188	119	063

Table D5 (con't)

Item	Com	Fact 1	**Fact 2**	Fact 3	Fact 4	Fact 5	Fact 6	Fact 7
C09	320	-034	**531**	003	-164	-100	009	003
C27	448	-016	**519**	-060	-185	026	289	-236
C05	463	-009	**515**	-242	-100	297	178	-100
C21	284	-134	**501**	057	090	-054	-012	027
C16	262	-009	**497**	-043	-026	052	-074	064
C20	316	-114	**485**	-045	-036	-202	-125	090
C14	460	-343	**468**	-178	082	-074	-182	216
C10	454	-050	**456**	-198	043	-384	-216	092
C24	258	-140	**449**	-038	-063	-173	-010	-043
C08	301	-067	**434**	-148	-002	266	-080	-093
C12	304	-173	**428**	092	-076	-170	110	189
C18	149	-045	322	-204	-020	-037	006	009
C22	266	-252	317	164	-067	-247	091	-029
T64	307	-116	-305	171	278	-103	206	-202
C23	178	-070	295	-195	001	-203	048	-071
T18	160	029	-284	122	159	-040	118	-149
C13	202	-077	273	-141	-180	-132	025	-121
T89	152	042	-245	016	217	-069	-071	-183
C15	114	-157	197	-185	009	-015	-111	-065
				Fact 3				
T72	520	-169	-254	**587**	075	239	-084	-114
T57	449	227	-118	**579**	-181	109	051	-026
T69	410	123	-121	**549**	046	226	-158	-033
T55	477	337	005	**535**	-232	-101	-009	-112
T60	401	145	-175	**522**	209	032	-122	-133
T70	313	-015	-170	**490**	194	066	030	033
T61	470	168	-119	(471)	050	160	(421)	026
T11	359	037	-128	**447**	151	096	258	-207
T23	372	280	-230	**429**	130	-113	-116	116
T62	330	102	021	**422**	132	164	299	082
T21	281	194	-079	372	145	-037	-251	118
T63	430	083	-191	368	005	347	358	-043
T31	185	139	-030	349	-063	-131	-085	-121
T67	252	323	033	339	141	-006	-098	043
T20	327	-101	-037	337	-090	-081	-333	-274
C26	351	-096	285	-332	-018	091	262	-270
I04	145	-069	126	-297	-150	-008	008	117
T90	227	121	-098	-285	217	156	-089	-205
I03	024	-053	-025	-128	057	-019	-025	018
					Fact 4			
T30	402	030	035	186	**590**	090	-093	-029
T66	439	047	-008	019	**589**	-010	279	-103
T28	449	-078	030	238	**564**	254	051	-024
T82	307	131	047	-099	**508**	050	124	-053
T52	341	085	-081	026	**490**	291	-039	-022
T84	338	185	-048	-204	**480**	125	047	-111
T36	442	401	-095	094	**474**	-120	-152	030
T34	370	090	-078	180	**445**	-226	-185	200
T35	385	-087	-115	247	**420**	-339	-107	006
T48	343	197	-055	-135	**404**	278	194	-064
T53	272	-028	-071	246	391	-029	-194	118
T65	236	-083	-102	-148	377	043	229	011
T54	318	035	-310	158	352	247	-015	103
T38	206	212	-117	-068	347	022	-098	109

Table D5 (con't)

Item	Com	Fact 1	Fact 2	Fact 3	**Fact 4**	Fact 5	Fact 6	Fact 7
T17	173	059	-111	107	324	066	191	-009
I13	081	-122	075	-022	-229	-026	085	-014
						Fact 5		
T49	332	097	063	-037	176	**512**	-017	153
T50	372	141	-031	263	120	**510**	049	078
C17	368	008	319	-070	034	**-489**	-060	130
T44	225	138	-048	-028	-076	382	226	-018
C19	195	063	176	021	058	-377	-029	-114
T74	272	297	-091	-189	030	355	-100	-053
I05	204	-074	-013	-132	-102	-324	166	193
T04	224	183	-217	056	200	317	-015	-001
T06	253	228	-234	084	094	314	-062	165
T86	208	206	102	117	206	288	-127	019
I20	081	-036	-038	-043	000	-230	082	131
I21	090	033	-161	045	061	225	081	005
T51	082	-020	-082	016	114	203	-142	-008
							Fact 6	
T29	271	070	071	-153	139	033	**427**	186
T26	302	150	130	-113	275	-034	**416**	012
I16	210	-139	011	077	-039	054	369	210
I15	214	-103	052	037	-115	-041	366	226
T79	238	237	-012	-156	059	124	335	-163
I11	186	-111	-092	062	-054	-253	303	047
T77	120	107	-010	-031	-018	108	-303	-059
T27	224	269	-004	202	059	-139	294	-046
T71	186	-161	-087	-207	105	-117	291	-015
I10	090	024	020	039	-062	016	284	-051
I02	111	-087	043	-081	012	-005	246	186
I09	104	089	028	-027	078	179	220	-088
								Fact 7
I17	231	-012	057	-038	-002	-013	009	**476**
I18	239	109	066	-096	-048	020	097	**448**
I22	200	-013	023	030	-036	-013	-064	**439**
I12	203	-060	161	-119	-021	037	151	367
I26	238	-128	240	107	138	046	076	355
I25	159	092	187	-011	048	031	144	302
I06	198	042	-180	001	-079	-038	259	298
T10	246	235	-221	113	204	103	-013	-276
I28	100	-164	013	019	019	013	001	269
I23	135	048	-101	-234	008	021	019	258
I07	108	148	103	-090	-021	-112	-090	217
I29	078	126	-070	029	057	-077	-038	213
Eigenvalues		16.65	5.66	4.78	4.29	4.17	3.04	3.01
% variance		7.11	6.05	4.13	3.83	3.27	2.90	2.43

Notes:

1. Individual items from the three scales are identified as follows: those from the I-E scale are labeled as Ixx (eg. I02 is the second item from the I-E scale), those from the CDI are labeled as Cxx and those from the TSCS are labeled as Txx.
2. All commonalities and factor loadings are shown without decimals. For example, for item T13, the commonality is 0.536 and the factor loading on Fact 1 is 0.689.
3. Loadings in **boldface** are considered to be part of the specified factor; items with loadings in parenthesis reflect loadings in more than one factor and are not considered in any factor.

Table D6

Principal Component Analysis
TSCS + CDI Scales
Seven Factor Solution Varimax Rotation
Factor Loadings

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5	Fact 6	Fact 7
C11	564	**717**	-167	013	048	-018	-030	-138
C03	485	**649**	-060	-032	-223	-029	-010	-092
C07	522	**636**	-308	-097	-008	-007	-099	-056
C02	418	**618**	-102	-147	-064	012	001	016
C01	456	**615**	-151	111	-111	-026	-010	-172
C04	472	**602**	-136	-176	023	-077	007	-230
C06	443	**583**	-200	-051	-044	-205	095	085
C25	420	**559**	-147	-151	-093	109	072	194
C21	329	**517**	031	-208	020	080	-099	-022
C20	340	**511**	-144	-010	029	-039	-155	-179
C09	346	**506**	-179	074	-010	-175	101	-106
C05	481	**503**	064	-045	-398	-076	036	238
C16	266	**500**	-046	030	-004	-047	-084	065
C27	416	**473**	101	-179	-287	-150	208	-038
C14	433	**467**	-364	-112	-009	092	-245	-021
C10	460	**450**	-281	180	017	026	-206	-320
C24	271	**448**	-091	-115	-079	-049	-027	-198
C12	342	**444**	019	-332	020	-022	-053	-176
C08	296	398	-172	093	-140	-031	004	281
T18	194	-322	-014	030	039	145	252	-057
T64	268	-321	046	-176	050	287	166	-137
C23	165	308	-081	-022	-172	024	-065	-170
C18	130	276	-107	037	-179	-029	-070	-058
T89	226	-275	-182	251	097	170	126	-021
C15	099	197	-135	-032	-126	007	-157	-001
			Fact 2					
T41	501	-122	**657**	138	-071	-006	068	160
T22	541	-146	**643**	081	064	211	-111	197
T09	579	-259	**547**	145	029	-037	434	-030
T42	403	-197	**525**	139	137	152	-091	137
T01	370	-102	**494**	227	113	-122	189	-017
T10	321	-211	**490**	-050	002	181	-009	032
T47	466	-189	**477**	316	-144	249	125	-070
T14	541	-174	**469**	275	-068	015	283	361
T03	400	-219	**467**	190	-029	-089	214	209
T46	398	-148	**443**	042	022	283	223	220
T07	284	-095	**441**	190	-046	-047	185	-083
T24	319	-133	**434**	120	046	180	-101	233
T43	438	-159	**429**	300	-037	135	335	081
T58	264	014	**422**	082	242	-064	094	-083
T32	364	-041	**420**	106	335	081	212	-108
T19	318	-148	**402**	255	243	-019	-063	080
T12	245	-088	397	-067	013	165	133	-173
T06	285	-174	375	028	097	073	-113	293
T76	297	-269	366	210	079	092	-069	166
T40	198	-109	336	174	193	062	027	-029
T04	258	-192	326	010	014	179	-041	285
T08	246	-158	289	238	-025	-083	244	117
T05	154	-096	262	250	114	-008	017	012

Table D6 (con't)

Item	Com	Fact 1	Fact 2	**Fact 3**	Fact 4	Fact 5	Fact 6	Fact 7
T87	481	-061	170	**636**	-089	148	093	-075
T73	378	-084	185	**557**	145	066	-020	026
T78	359	-024	177	**501**	008	189	-121	160
T13	539	-058	429	**490**	125	-052	277	127
T15	370	157	309	**477**	091	093	-069	038
T85	348	-037	089	**469**	327	094	041	039
T56	398	-038	348	**468**	180	-117	102	012
T33	405	107	282	**417**	368	-034	-056	-030
C22	371	351	089	**-415**	069	-039	-087	-232
T39	314	-235	210	385	066	234	085	030
T37	420	-308	(360)	(370)	020	003	132	202
T75	166	-046	011	360	-170	006	051	-050
T02	257	-001	266	358	202	-029	003	130
T59	236	-156	148	327	-016	209	-080	179
T90	238	-161	-116	323	-202	177	-007	151
T16	241	-124	206	270	-102	084	253	171
T68	105	003	078	236	112	-101	141	-012
					Fact 4			
T69	436	-124	107	045	**528**	-045	250	251
T60	420	-156	305	-072	**514**	146	075	079
C26	312	240	001	-088	**-492**	014	065	024
T21	278	-023	166	098	**477**	103	-029	037
T23	387	-175	329	062	**475**	097	026	-092
T72	491	-266	063	-296	**474**	029	183	264
T70	360	-173	-023	-068	**446**	148	283	154
T57	495	-118	148	064	(439)	-241	(437)	116
T55	478	004	347	011	**428**	-269	303	-103
T20	215	-083	-088	-034	**410**	-172	-023	-036
T53	271	-064	044	029	(370)	(351)	-065	021
T67	281	036	125	261	368	092	227	014
T31	213	-063	020	101	323	-123	248	-131
T71	216	-062	066	-258	-300	176	-076	-121
						Fact 5		
T66	453	-039	006	029	-058	**611**	269	-030
T30	417	063	161	-031	236	**556**	-052	135
T28	461	056	116	-168	180	**515**	097	023
T84	321	-083	059	234	-183	**458**	056	094
T52	367	-061	061	144	096	**440**	008	369
T36	434	-071	238	337	243	**438**	-021	-092
T35	397	-109	006	-123	335	**412**	-063	-290
T65	247	-128	-116	-013	-173	**412**	122	047
T34	365	-040	-062	200	360	**409**	-046	-145
T48	341	-048	241	106	-205	390	067	268
T80	334	072	(349)	256	-023	(350)	102	089
T83	356	-117	305	287	-182	348	060	095
T54	324	-270	081	013	182	(331)	021	(319)
T17	170	-119	140	-068	019	326	151	049
T38	209	-105	116	238	080	314	-142	051
							Fact 6	
T61	496	-115	201	-106	185	074	**614**	119
T63	483	-205	124	-109	106	012	**550**	316
T62	362	021	038	-012	226	152	**518**	133
T27	330	-029	012	209	067	061	**502**	-158
T45	386	-041	276	142	024	167	**485**	155

Table D6 (con't)

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5	**Fact 6**	Fact 7
T26	358	101	-081	194	-229	(326)	(378)	-050
T81	330	-074	297	(332)	-025	061	(347)	-032
T11	345	-125	299	-257	180	152	342	042
T79	275	-062	126	169	(-329)	089	(332)	008
T25	275	048	323	034	081	225	331	-020
T29	252	081	-053	056	-299	227	313	-031
T77	088	019	130	112	070	-053	-208	085
								Fact 7
T49	348	084	033	137	-004	163	020	**542**
T50	381	-022	092	083	176	084	262	**509**
C17	356	335	-159	100	062	046	-092	**-441**
C19	175	152	-054	113	074	039	016	-359
T74	270	-089	147	(323)	-116	-021	-040	(347)
T44	262	-073	016	138	-180	-066	312	321
T86	217	105	087	244	158	137	066	302
C13	203	250	-070	-056	-164	-161	-018	-282
T51	107	-082	-064	086	101	065	-066	265
T88	202	-199	112	251	-102	103	052	252
Eigenvalues		16.10	5.49	4.60	3.97	3.82	2.82	2.72
% variance		6.76	6.50	4.91	4.36	4.10	3.85	3.30

Notes:

1. Individual items from the two scales are identified as follows: those from the CDI scale are labeled as Cxx (eg, C02 is the second item from the CDI scale) and those from the TSCS are labeled as Txx.

2. All commonalities and factor loadings are shown without decimals. For example, for item C11, the commonality is 0.564 and the factor loading on Fact 1 is 0.717.

3. Loadings in **boldface** are considered to be part of the specified factor; items with loadings in parenthesis reflect loadings in more than one factor and are not considered in any factor.

Table D7

Principal Component Analysis
CDI + I-E Scales
Five Factor Solution Varimax Rotation
Factor Loadings

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5
C04	508	**693**	027	-067	122	087
C11	578	**664**	231	248	-054	140
C20	389	**596**	-054	-026	-001	173
C01	450	**590**	215	136	-051	184
C07	509	**577**	343	238	-006	046
C02	418	**557**	281	018	100	137
C09	337	**554**	098	125	-059	-032
C21	330	**544**	-041	-020	127	126
C24	316	**541**	025	-072	025	132
C12	406	**541**	-080	104	243	-133
C06	465	**532**	336	061	096	-237
C10	476	**528**	071	205	-281	267
C22	512	**523**	-262	-205	358	010
C03	552	**522**	469	004	101	223
C14	355	**499**	206	250	-032	018
C25	486	**493**	279	122	262	-284
C17	331	**429**	-102	171	-113	-308
C27	398	**428**	318	-153	280	-111
C18	178	**408**	-045	046	-024	-085
C16	235	380	279	086	067	-028
C13	173	316	123	-065	-096	210
C19	155	306	-240	-002	-054	-023
I21	078	-247	-030	-008	029	123
I04	085	152	138	129	129	096
			Fact 2			
C08	511	150	**695**	033	-035	048
C05	539	260	**661**	-044	167	-065
C26	368	111	**529**	-151	135	186
I06	228	-085	283	093	279	234
				Fact 3		
I17	343	033	-033	**536**	-027	230
I12	310	088	115	**533**	024	068
I18	317	-005	039	**528**	176	-078
I22	254	024	-100	**473**	002	141
I26	265	212	090	**436**	026	-146
I25	279	106	040	395	274	-189
I29	195	-056	-133	387	-111	-110
I28	223	134	-247	341	158	-054

Table D7 (con't)

Item	Com	Fact 1	Fact 2	Fact 3	**Fact 4**	Fact 5
I16	421	-092	126	159	**591**	149
I15	331	-010	101	207	**505**	149
I11	355	-003	-220	-027	**499**	240
I10	224	-050	073	-118	**448**	-041
I02	120	105	-065	110	303	033
I09	167	-054	088	-076	280	-270
I13	064	073	097	028	220	-012
						Fact 5
C23	410	267	155	-156	044	**537**
C15	333	219	062	-097	-123	**506**
I23	276	-168	079	251	104	**409**
I20	227	064	-248	-011	119	387
I07	128	-008	161	132	102	273
I03	074	-017	025	-024	091	254
I05	144	126	-166	201	139	203
Eigenvalues		7.42	2.45	2.19	1.93	1.83
%variance		12.81	5.55	4.80	4.31	4.19

Notes:

1. Individual items from the two scales are identified as follows: those from the I-E scale are labeled as Ixx (eg, I02 is the second item from the I-E scale) and those from the CDI are labeled as **Cxx**.

2. All commonalities and factor loadings are shown without decimals. For example, for item C04, the commonality is 0.508 and the factor loading on Fact 1 is 0.693.

3. Loadings in **boldface** are considered to be part of the specified factor; items with loadings in parenthesis reflect loadings in more than one factor and are not considered in any factor.

Table D8

Principal Component Analysis
TSCS + I-E Scales
Six Factor Solution Varimax Rotation
Factor Loadings

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5	Fact 6
T41	553	**733**	082	-005	-083	027	031
T22	528	**662**	041	242	040	-105	126
T14	556	**633**	165	059	-000	226	-272
T03	397	**559**	182	-021	011	122	-192
T42	396	**558**	085	209	109	-145	006
T13	541	**548**	245	-066	347	232	-040
T09	549	**535**	433	-041	002	189	-194
T37	385	**534**	108	069	163	146	-190
T76	299	**508**	003	157	088	-067	-062
T01	367	**494**	261	-122	181	039	-076
T19	335	**488**	117	017	239	-144	071
T24	300	**487**	022	228	068	-057	052
T06	302	**463**	050	190	-008	-179	132
T43	442	**455**	237	108	160	344	-152
T47	424	**448**	029	181	195	318	-222
T56	436	**443**	111	-100	348	025	-307
T07	260	**442**	128	-113	075	133	-111
T46	391	**433**	235	314	-049	151	-155
T74	237	**431**	-187	043	036	072	-090
T04	259	**420**	-030	263	-057	-081	-054
T08	256	**407**	159	-096	060	224	-039
T39	281	**403**	066	241	188	131	056
T10	260	375	093	207	014	-071	-250
T40	207	371	168	106	126	-108	046
T80	312	363	028	282	204	215	111
T59	246	360	-103	270	155	021	094
T58	241	356	257	-103	150	-087	083
T83	346	342	-080	291	170	295	-152
T16	272	341	087	089	032	292	-233
T88	179	327	-065	167	056	153	-115
T05	192	296	069	-010	288	035	124
T50	193	284	250	202	-035	083	036
I09	156	264	-040	071	-260	108	-021
T49	139	234	-059	220	-019	142	108
T86	115	229	063	193	141	024	-007
I21	076	193	069	121	-131	044	009
T68	090	169	118	-119	162	082	011
			Fact 2				
T57	463	174	**636**	-130	083	-024	-059
T61	510	190	**617**	074	-137	246	093
T55	464	216	**544**	-255	172	-132	-092
T62	375	046	**523**	158	-032	226	149
T69	370	191	**514**	116	081	-213	-065
T72	522	091	**511**	231	-212	-356	-167
T63	434	243	**500**	070	-265	220	032
T70	301	018	**478**	254	000	-057	-067
T11	369	192	**461**	205	-241	-044	-134
T60	450	266	**428**	257	021	-324	-155
T23	383	220	**424**	148	274	-227	078
T32	334	307	**409**	063	252	-021	068

Table D8 (con't)

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5	Fact 6
T31	245	-056	381	-086	231	-018	-187
T45	368	291	(371)	157	040	(344)	006
T67	269	120	(354)	090	(343)	058	026
I04	186	016	-335	-169	-111	-058	171
T25	252	201	313	140	111	277	074
T12	115	210	222	107	043	048	-078
I03	031	021	-147	053	-053	-061	008
				Fact 3			
T28	452	120	154	**617**	-164	-075	030
T30	367	067	075	**584**	103	-071	-016
T66	408	023	078	**530**	-074	336	-037
T52	334	232	-018	**521**	-003	039	-080
T82	288	136	-107	**441**	007	252	-008
T54	251	189	168	**432**	014	-013	-014
T53	295	-074	169	**431**	205	-181	-004
T84	314	205	-162	**425**	058	234	-082
T34	383	-124	151	(427)	(398)	-038	045
T35	309	-179	191	**413**	164	-203	-038
T48	343	309	-094	386	-066	288	-047
T65	258	-082	-059	(361)	-077	(330)	048
T38	218	152	-081	342	256	-053	047
T17	166	102	152	333	-026	136	054
T64	249	003	222	331	-214	001	-210
I13	092	-101	-007	246	-139	000	045
T51	062	094	-028	165	-021	-078	-138
					Fact 4		
T33	441	220	159	-018	**593**	-092	-084
T85	389	119	197	115	**560**	098	008
T15	416	317	-040	034	**510**	150	174
T36	409	213	081	(392)	(442)	075	-054
T73	328	332	011	094	**441**	076	-094
T87	430	330	-097	077	**423**	326	-145
T02	272	311	133	029	390	-004	066
T78	335	(340)	-151	216	(362)	136	009
T71	167	001	-170	110	-338	056	092
T21	282	129	288	157	296	-261	040
I10	092	110	076	-084	-230	104	057
I11	096	-131	158	-068	-185	087	088
I29	058	064	024	049	160	-022	157
						Fact 5	
T26	393	-048	051	167	023	**593**	090
T79	268	193	-001	-003	-075	**468**	-077
T29	304	-016	008	087	-074	**461**	280
T27	333	003	(375)	-028	161	(406)	-032
T44	182	217	067	-041	-139	329	-032
T77	117	157	-123	004	147	-224	-076
							Fact 6
I17	242	-047	-022	006	106	-040	**476**
I12	231	-086	-075	-009	-060	095	**453**
I18	236	029	-056	-049	127	094	**453**
T20	333	-151	229	-065	115	-292	-394
I22	157	-035	013	-012	089	-087	375
I25	160	-034	007	002	127	201	320
T89	191	-049	086	216	129	140	-314

Table D8 (con't)

Item	Com	Fact 1	Fact 2	Fact 3	Fact 4	Fact 5	**Fact 6**
I16	209	-025	143	007	-292	085	309
I15	205	-053	112	-113	-255	131	307
I06	141	133	094	-051	-156	071	288
I23	146	161	-210	019	-064	-033	266
I02	116	-009	-056	023	-194	089	259
T90	221	125	-231	182	079	217	-257
T75	190	148	-182	-051	166	204	-251
I07	130	073	-126	-074	183	-093	248
T18	146	076	202	179	-076	095	-229
I05	099	-145	-080	-136	-065	034	219
I28	067	-153	-006	048	-004	-023	203
I20	038	-034	-034	-033	-055	-050	172
Eigenvalues		13.58	4.66	4.10	3.70	3.07	2.74
%variance		8.25	5.06	4.53	3.92	3.52	2.91

Notes:

1. Individual items from the two scales are identified as follows: those from the I-E scale are labeled as Ixx (eg, I02 is the second item from the I-E scale) and those from the TSCS are labeled as Txx.

2. All commonalities and factor loadings are shown without decimals. For example, for item T41, the commonality is 0.553 and the factor loading on Fact 1 is 0.733.

3. Loadings in **boldface** are considered to be part of the specified factor, items with loadings in parenthesis reflect loadings in more than one factor and are not considered in any factor.

Appendix E

Profile Analysis

Table E1

Means (and SD) For Pofile Analysis

Using Z Scores:

				TSCS Subscales		
Gr	N	CDI	I-E	Ident	Self Sat.	Behav
MDD	61	0.520 (0.962)	-0.031 (1.031)	-0.230 (0.908)	-0.420 (0.980)	-0.335 (0.966)
DYS	30	-0.031 (0.713)	0.062 (0.987)	0.015 (0.940)	0.002 (0.790)	-0.053 (1.033)
CD	35	-0.511 (0.961)	-0.158 (0.883)	0.174 (1.110)	0.472 (0.847)	0.349 (0.928)
OPP	16	-0.572 (0.845)	-0.089 (1.197)	0.171 (0.954)	0.396 (0.787)	0.297 (0.696)
ADD	13	-0.117 (0.860)	0.125 (0.650)	0.338 (1.145)	-0.039 (0.811)	-0.329 (0.841)
VC	11	-0.002 (1.202)	-0.028 (1.247)	0.215 (1.073)	0.697 (0.971)	0.344 (1.307)

Using Non-Transformed Raw Scores:

				TSCS Subscales		
Gr	N	CDI	I-E	Ident	Self Sat.	Behav
MDD	61	18.46 (9.00)	10.41 (3.55)	104.26 (13.13)	90.30 (15.06)	91.03 (11.59)
DYS	30	12.70 (6.38)	10.73 (3.36)	107.90 (13.20)	97.23 (11.74)	95.27 (12.00)
CD	35	9.66 (7.29)	9.94 (2.98)	110.29 (15.71)	104.66 (13.32)	99.26 (11.48)
OPP	16	8.94 (5.49)	10.19 (4.03)	110.19 (13.57)	103.44 (12.75)	98.31 (8.18)
ADD	13	12.46 (6.64)	10.77 (2.04)	112.54 (15.94)	96.85 (11.51)	91.15 (9.69)
VC	11	13.64 (10.28)	10.46 (4.08)	111.36 (15.71)	109.00 (15.61)	99.91 (16.58)

Table E1 (con't)

Using T-Scores for TSCS Variables:

		TSCS Subscales		
Gr	N	Ident	Self Sat.	Behav
MDD	61	30.13 (9.59)	40.79 (9.50)	30.07 (8.01)
DYS	30	32.77 (10.70)	44.20 (8.11)	33.50 (9.55)
CD	35	35.14 (12.74)	49.60 (9.78)	36.09 (9.73)
OPP	16	34.75 (11.61)	49.50 (9.23)	35.00 (6.62)
ADD	13	34.62 (10.13)	44.69 (7.91)	29.85 (6.29)
VC	11	37.64 (14.62)	53.55 (11.43)	37.18 (13.35)

Table E2

Summary Statistics From Profile Analysis Using Z-Scores

Groups: MDD, DYS, CD, OPP. **Variables**: CDI, I-E, Ident, Self Sat., Behav

---

1. Overall multivariate analysis of variance
   F(15.0,370.3)=3.29 p<.0004
2. Parallelism of line segments (interaction effect)
   F(12.0,357.5)=4.04 p<.0004
3. Equal mean profile effect (levels difference)
   F(3.0,138.0)=1.21 p=.307
4. Equal variable effect
   F(4,135)=0.14 p=.968

Groups: MDD, DYS, CD, OPP, ADD. **Variables**: CDI, I-E, Ident, Self Sat., Behav

---

1. Overall multivariate analysis of variance
   F(20.0,485.2)=2.86 p<.0001
2. Parallelism of line segments (interaction effect)
   F(16.0,449.7)=3.54 p<.0001
3. Equal mean profile effect (levels difference)
   F(4.0,150.0)=0.93 p=.451
4. Equal variable effect
   F(4,147)=0.26 p=.902

Groups: MDD, DYS, CD, OPP, ADD, VC. **Variables**: CDI, I-E, Ident, Self Sat., Behav

---

1. Overall multivariate analysis of variance
   F(25.0,581.0)=2.57 p<.0004
2. Parallelism of line segments (interaction effect)
   F(20.0,521.7)=3.03 p<.0004
3. Equal mean profile effect (levels difference)
   F(5.0,160.0)=1.48 p=.199
4. Equal variable effect
   F(4,157)=0.293 p=.882

Table E2 (con't)
Using Z-Scores for TSCS Variables:

Groups: MDD, DYS, CD, OPP. **Variables**: Ident, Self Sat., Behav

---

1. Overall multivariate analysis of variance
   F(9.0,331.1)=2.90 p=.003
2. Parallelism of line segments (interaction effect)
   F(6.0,274.0)=1.05 p=.392
3. Equal mean profile effect (levels difference)
   F(3.0,138.0)=6.29 p<.0004
4. Equal variable effect
   F(2,137)=0.03 p=.974

Groups: MDD, DYS, CD, OPP, ADD. **Variables**: Ident, Self Sat., Behav

---

1. Overall multivariate analysis of variance
   F(12.0,391.9)=2.78 p=.001
2. Parallelism of line segments (interaction effect)
   F(8.0,298.0)=1.58 p=.128
3. Equal mean profile effect (levels difference)
   F(4.0,150.0)=4.73 p=.001
4. Equal variable effect
   F(2,149)=0.37 p=.694

Groups: MDD, DYS, CD, OPP, ADD, VC. **Variables**: Ident, Self Sat., Behav

---

1. Overall multivariate analysis of variance
   F(15.0,436.6)=2.48 p=.002
2. Parallelism of line segments (interaction effect)
   F(10.0,318.0)=2.560 p=.005
3. Equal mean profile effect (levels difference)
   F(5.0,160.0)=1.94 p=.090
4. Equal variable effect
   F(2,159)=0.144 p=0.866

Table E3

Summary Statistics From Profile Analysis Using T-Scores

Using T- Scores for TSCS Variables:

Groups: MDD, DYS, CD, OPP. **Variables:** Ident, Self Sat., Behav

1. Overall multivariate analysis of variance
   F(9.0,331.1)=2.73 p=.004
2. Parallelism of line segments (interaction effect)
   F(6.0,274.0)=0.89 p=.504
3. Equal mean profile effect (levels difference)
   F(3.0,138.0)=5.77 p=.001
4. Equal variable effect
   F(2,137)=144.41 p<.0004

Groups: MDD, DYS, CD, OPP, ADD. **Variables:** Ident, Self Sat., Behav

1. Overall multivariate analysis of variance
   F(12.0,391.9)=2.52 p=.003
2. Parallelism of line segments (interaction effect)
   F(8.0,298.0)=1.26 p=.263

3. Equal mean profile effect (levels difference)
   F(4.0,150.0)=4.47 p=.002
4. Equal variable effect
   F(2,149)=164.51 p<.0004

Groups: MDD, DYS, CD, OPP, ADD, VC. **Variables:** Ident, Self Sat., Behav

1. Overall multivariate analysis of variance
   F(15.0,436.6)=2.47 p=.002
2. Parallelism of line segments (interaction effect)
   F(10.0,318.0)=1.25 p=0.259
3. Equal mean profile effect (levels difference)
   F(5.0,160.0)=4.42 p=.001
4. Equal variable effect
   F(2,159)=179.13 p<.0004

Table E4

Summary Statistics From Profile Analysis Using Non-Transformed Raw Scores

Groups: MDD, DYS, CD, OPP. **Variables:** Ident, Self Sat., Behav

1. Overall multivariate analysis of variance
   F(9.0,331.1)=2.73 p=.004
2. Parallelism of line segments (interaction effect)
   F(6.0,274.0)=0.89 p=.504
3. Equal means effect (levels difference)
   F(3.0,138.0)=5.77 p=.001
4. Equal variable effect
   F(2,137)=144.41 p<.0004

Groups: MDD, DYS, CD, OPP, ADD. **Variables:** Ident, Self Sat., Behav

1. Overall multivariate analysis of variance
   F(12.0,391.9)=3.00 p<.0004
2. Parallelism of line segments (interaction effect)
   F(8.0,298.0)=2.02 p=.044
3. Equal mean profile effect (levels difference)
   F(4.0,150.0)=5.15 p=.001
4. Equal variable effect
   F(2,149)=98.71 p<.0004

Groups: MDD, DYS, CD, OPP, ADD, VC. **Variables:** Ident, Self Sat., Behav

1. Overall multivariate analysis of variance
   F(15.0,436.6)=2.83 p<.0004
2. Parallelism of line segments (interaction effect)
   F(10.0,318.0)=1.99 p=.034
3. Equal mean profile effect (levels difference)
   F(5.0,160.0)=4.75 p<.0004
4. Equal variable effect
   F(2,159)=107.00 p<.0004

Table E5

Discrepancy Score Analysis*

Analysis of Variance Table:

Source	SS	DF	MS	F	P
Gr	2639.223	5	527.845	2.339	.044
Error	35663.899	158	225.721		

Descriptive Statistics:

Group	N	Mean	SD
MDD	59	-13.509	15.432
DYS	30	-10.667	12.477
CD	35	-5.629	16.168
OPP	16	-6.750	13.404
ADD	13	-15.692	15.494
VC	11	-2.364	16.949

*Score=Self Sat-Ident (both in non-transformed form). Since both scales have the same number of items, the difference is a valid measure. The sign (+ or -) denotes the direction of that difference. In all groups, the level of Self Satisfaction is ***lower*** than the current view of the self (Identity). Post hoc analysis with the Duncan procedure (*p*=.05) showed that the MDD group had a significantly ***larger*** difference than both the CD and VC groups.

Appendix F

Discriminant Analysis

Table F1

Summary of Discriminant Analysis
Classification Tables: Z-Scores

Groups: Six; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1	2	3	4	5	6
MDD	61	32 52.5	2 3.3	4 6.6	7 11.5	9 14.8	7 11.5
DYS	30	8 26.7	2 6.7	3 10.0	5 16.7	7 23.3	5 16.7
CD	35	1 2.9	3 8.6	8 22.9	10 28.6	4 11.4	9 25.7
OPP	16	22 12.5	4 12.5	4 25.0	2 25.0	2 12.5	12.5
ADD	13	2 15.4	1 7.7	0 0.0	3 23.1	5 38.5	2 15.4
VC	11	1 9.1	1 9.1	2 18.2	0 0.0	2 18.2	5 45.5

Overall percent correctly classified **33.73**%

Groups: Five; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1	2	3+4	5	6
MDD	61	32 52.5	2 3.3	11 18.0	9 14.8	7 11.5
DYS	30	8 26.7	2 6.7	7 23.3	8 26.7	5 16.7
CD+OPP	51	3 5.9	6 11.8	24 47.1	7 13.7	11 21.6
ADD	13	2 15.4	2 15.4	2 15.4	5 38.5	2 15.4
VC	11	1 9.1	1 9.1	1 9.1	2 18.2	6 54.5

Overall percent correctly classified **41.57**%

Table F1 (con't)

Groups: Three; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership		
		1+2	3+4	6
MDD+DYS	91	56	21	14
		61.5	23.1	15.4
CD+OPP	51	10	28	13
		19.6	54.9	25.5
VC	11	2	2	7
		18.2	18.2	63.6

Overall percent correctly classified 59.48%

Groups: Three; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership		
		1	3+4	6
MDD	61	41	11	9
		67.2	18.0	14.8
CD+OPP	51	9	30	12
		17.6	58.8	23.5
VC	11	1	3	7
		9.1	27.3	63.6

Overall percent correctly classified 63.41%

Table F2

Summary of Discriminant Analysis Classification Tables: Raw Scores

Groups: Six; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1	2	3	4	5	6
MDD	61	32	4	5	4	12	4
		52.5	6.6	8.2	6.6	19.7	6.6
DYS	30	5	8	4	5	4	4
		16.7	26.7	13.3	16.7	13.3	13.3
CD	35	0	5	8	8	5	9
		0.0	14.3	22.9	22.9	14.3	25.7
OPP	16	1	4	2	4	2	3
		6.3	25.0	12.5	25.0	12.5	18.8
ADD	13	2	2	0	2	6	1
		15.4	15.4	0.0	15.4	46.2	7.7
VC	11	1	1	1	0	2	6
		9.1	9.1	9.1	0.0	18.2	54.5

Overall percent correctly classified **38.55**%

Groups: Five; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1	2	3+4	5	6
MDD	61	32	5	8	12	4
		52.5	8.2	13.1	19.7	6.6
DYS	30	5	8	9	4	4
		16.7	26.7	30.0	13.3	13.3
CD+OPP	51	1	10	21	7	12
		2.0	19.6	41.2	13.7	23.5
ADD	13	2	2	2	6	1
		15.4	15.4	15.4	46.2	7.7
VC	11	1	1	1	2	6
		9.1	9.1	9.1	18.2	54.5

Overall percent correctly classified **43.98**%

Table F2 (con't)

Groups: Three; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership		
		1+2	3+4	6
MDD+DYS	91	57	22	12
		62.6	24.2	13.2
CD+OPP	51	9	30	12
		17.6	58.8	23.5
VC	11	1	4	6
		9.1	36.4	54.5

Overall percent correctly classified 60.78%

Groups: Three; **Variables:** CDI, I-E, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership		
		1	3+4	6
MDD	61	41	14	6
		67.2	23.0	9.8
CD+OPP	51	9	31	11
		17.6	60.8	21.6
VC	11	1	4	6
		9.1	36.4	54.5

Overall percent correctly classified 63.41%

Table F3

Summary of Discriminant Analysis
Classification Tables: T-Scores

Using T-Scores for TSCS Variables:

Groups: Six; **Variables:** CDI (raw score), I-E (raw score), Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership					
		1	2	3	4	5	6
MDD	61	30	8	5	2	11	5
		49.2	13.1	8.2	3.3	18,0	8.2
DYS	30	5	7	5	3	6	4
		16.7	23.3	16.7	10.0	20.0	13.3
CD	35	1	4	8	10	5	7
		2.9	11.4	22.9	28.6	14.3	20.0
OPP	16	1	5	2	4	2	2
		6.3	31.3	12.5	25.0	12.5	12.5
ADD	13	1	1	0	4	6	1
		7.7	7,7	0.0	30.8	46.2	7.7
VC	11	1	1	0	0	3	6
		9.1	9.1	0.0	0.0	27.3	54.5

Overall percent correctly classified 36.75%

Groups: Five; **Variables:** CDI (raw score), I-E (raw score), Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership				
		1	2	3+4	5	6
MDD	61	32	8	7	11	5
		52.5	13.1	11.5	18.0	8.2
DYS	30	5	7	7	7	4
		16.7	23.3	23.3	23.3	13.3
CD+OPP	51	2	11	17	9	12
		3.9	21.6	33.3	17.6	23.5
ADD	13	1	1	3	7	1
		7.7	7.7	23.1	53.8	7.7
VC	11	1	1	0	3	6
		9.1	9.1	0.0	27.3	54.5

Overall percent correctly classified 40.36%

Table F3 (con't)

Groups: Three; **Variables:** CDI (raw score), I-E (raw score), Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1+2	 3+4	 6
MDD+DYS	91	57 62.6	23 25.3	11 12.1
CD+OPP	51	8 15.7	29 56.9	14 27.5
VC	11	1 9.1	3 27.3	7 63.6

Overall percent correctly classified 60.78%

Groups: Three; **Variables:** CDI (raw score), I-E (raw score), Ident, Self-Sat., Behav

Actual group	Cases	Predicted Group Membership 1	 3+4	 6
MDD	61	39 63.9	15 24.6	7 11.5
CD+OPP	51	8 15.7	30 58.8	13 25.5
VC	11	1 9.1	3 27.3	7 63.6

Overall percent correctly classified 61.79%

Table F4

Summary of Discriminant Analysis
Classification Tables: I-E Prop Vic

Using Raw Scores

Groups: Six; **Variables:** CDI, Prop Vic, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership					
		1	2	3	4	5	6
MDD	61	30	2	2	7	13	7
		49.2	3.3	3.3	11.5	21.3	11.5
DYS	30	8	6	5	5	4	2
		26.7	20.0	16.7	16.7	13.3	6.7
CD	35	1	1	10	10	4	9
		2.9	2.9	28.6	28.6	11.4	25.7
OPP	16	2	3	2	6	1	2
		12.5	18.8	12.5	37.5	6.3	12.5
ADD	13	2	2	0	0	7	2
		15.4	15.4	0.0	0.0	53.8	15.4
VC	11	1	1	1	0	2	6
		9.1	9.1	9.1	0.0	18.2	54.5

Overall percent correctly classified 39.16%

Groups: Five; **Variables:** CDI , Prop Vic, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership				
		1	2	3+4	5	6
MDD	61	30	2	9	13	7
		49.2	3.3	14.8	21.3	11.5
DYS	30	8	7	9	4	2
		26.7	23.3	30.0	13.3	6.7
CD+OPP	51	3	6	25	6	11
		5.9	11.8	49.0	11.8	21.6
ADD	13	2	2	0	7	2
		15.4	15.4	0.0	53.8	15.4
VC	11	1	1	1	2	6
		9.1	9.1	9.1	18.2	54.5

Overall percent correctly classified 45.18%

Table F4 (con't)

Groups: Three; **Variables:** CDI, Prop Vic, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1+2	 3+4	 6
MDD+DYS	91	57 62.6	21 23.1	13 14.3
CD+OPP	51	9 17.6	30 58.8	12 23.5
VC	11	1 9.1	3 27.3	7 63.6

Overall percent correctly classified 61.44%

Groups: Three; **Variables:** CDI, Prop Vic, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership 1	 3+4	 6
MDD	61	40 65.6	12 19.7	9 14.8
CD+OPP	51	9 17.6	30 58.8	12 23.5
VC	11	1 9.1	3 27.3	7 63.6

Overall percent correctly classified 62.60%

Table F5

Summary of Discriminant Analysis
Classification Tables: I-E Prop Nc

Using Raw Scores:

Groups: Six; **Variables:** CDI, Prop Nc, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership					
		1	2	3	4	5	6
MDD	61	30	4	4	8	11	4
		49.2	6.6	6.6	13.1	18.0	6.6
DYS	30	6	5	4	6	6	3
		20.0	16.7	13.4	20.0	20.0	10.0
CD	35	0	3	13	6	5	8
		0.0	8.6	37.1	17.1	14.3	22.9
OPP	16	1	3	0	8	2	2
		6.3	18.8	0.0	50.0	12.5	12.5
ADD	13	1	1	0	3	7	1
		15.4	7.7	0.0	23.1	53.8	7.7
VC	11	1	1	1	1	2	5
		9.1	9.1	9.1	9.1	18.2	45.5

Overall percent correctly classified 40.96%

Groups: Five; **Variables:** CDI, Prop Nc, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership				
		1	2	3+4	5	6
MDD	61	30	7	9	11	4
		49.2	11.5	14.8	18.0	6.6
DYS	30	6	9	5	6	4
		20.0	30.0	16.7	20.0	13.3
CD+OPP	51	1	10	22	7	11
		2.0	19.6	43.1	13.7	21.6
ADD	13	1	4	0	7	1
		7.7	30.8	0.0	53.8	7.7
VC	11	1	1	1	2	6
		9.1	9.1	9.1	18.2	54.5

Overall percent correctly classified 44.58%

Table F5 (con't)

Groups: Three; **Variables:** CDI, Prop Nc, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership		
		1+2	3+4	6
MDD+DYS	91	55	23	13
		60.4	25.3	14.3
CD+OPP	51	8	29	14
		15.7	56.9	27.5
VC	11	1	4	6
		9.1	36.4	54.5

Overall percent correctly classified 58.82%

Groups: Three; **Variables:** CDI, Prop Nc, Ident, Self Sat., Behav

Actual group	Cases	Predicted Group Membership		
		1	3+4	6
MDD	61	39	15	7
		63.9	24.6	11.5
CD+OPP	51	7	29	15
		13.7	56.9	29.4
VC	11	1	4	6
		9.1	36.4	54.5

Overall percent correctly classified 60.16%

Appendix G

Two-Way ANOVA Tables

Table G1

Two-Way Anova Tables for Major Variables
Diagnostic Group By Gender

Variable: CDI

Source	SS	DF	MS	F	P
Gr	1656.101	5	331.220	5.309	<.0004
Gender	344.315	1	344.315	5.519	0.020
Gr X Gender	294.042	5	58.808	0.943	0.455
Error	9607.690	154	62.388		

Variable: IE

Source	SS	DF	MS	F	P
Gr	9.238	5	1.848	0.163	0.976
Gender	46.560	1	46.560	4.111	0.044
Gr X Gender	123.252	5	24.650	2.176	0.060
Error	1744.167	154	11.326		

Variable: TOTP (T-score)

Source	SS	DF	MS	F	P
Gr	1481.721	5	296.344	3.846	0.003
Gender	62.910	1	62.910	0.816	0.368
Gr X Gender	488.611	5	97.722	1.268	0.280
Error	11865.545	154	77.049		

Variable: R1 (T-score)

Source	SS	DF	MS	F	P
Gr	569.446	5	113.889	0.911	0.476
Gender	471.760	1	471.760	3.774	0.054
Gr X Gender	843.980	5	168.796	1.350	0.246
Error	19249.486	154	124.997		

Variable: R2 (T-score)

Source	SS	DF	MS	F	P
Gr	2656.895	5	531.379	5.858	<.0004
Gender	1.416	1	1.416	0.016	0.901
Gr X Gender	470.432	5	94.086	1.037	0.398
Error	13969.078	154	90.708		

Table G1 (con't)
Variable: R3 (T-score)

Source	SS	DF	MS	F	P
Gr	1136.906	5	227.381	2.773	0.020
Gender	4.588	1	4.588	0.056	0.813
Gr X Gender	512.578	5	102.516	1.250	0.288
Error	12626.143	154	81.988		

Variable: RTOTP (Raw score)

Source	SS	DF	MS	F	P
Gr	20603.544	5	4120.709	3.724	0.003
Gender	1602.087	1	1602.087	1.448	0.231
Gr X Gender	6593.040	5	1318.608	1.192	0.316
Error	170415.863	154	1106.597		

Variable: RR1 (Raw score)

Source	SS	DF	MS	F	P
Gr	827.646	5	165.529	0.821	0.537
Gender	809.363	1	809.363	4.013	0.047
Gr X Gender	1473.588	5	294.718	1.461	0.206
Error	31060.908	154	201.694		

Variable: RR2 (Raw score)

Source	SS	DF	MS	F	P
Gr	6050.439	5	1210.088	6.122	<.0004
Gender	46.051	1	46.051	0.233	0.630
Gr X Gender	690.441	5	138.088	0.699	0.625
Error	30439.079	154	197.656		

Table G1 (con't)

Variable: RR3 (Raw score)

Source	SS	DF	MS	F	P
Gr	1948.566	5	389.713	2.789	0.019
Gender	25.380	1	25.380	0.182	0.671
Gr X Gender	898.164	5	179.633	1.286	0.273
Error	21516.981	154	139.721		

Table G1 (con't)
Variable: PAG

Source	SS	DF	MS	F	P
Gr	15.890	5	3.178	0.827	0.532
Gender	2.589	1	2.589	0.674	0.413
Gr X Gender	18.556	5	3.711	0.966	0.440
Error	591.488	154	3.841		

Variable: VIC

Source	SS	DF	MS	F	P
Gr	17.335	5	3.467	1.105	0.360
Gender	25.316	1	25.316	8.070	0.005
Gr X Gender	48.124	5	9.625	3.068	0.011
Error	483.082	154	3.137		

Variable: NC

Source	SS	DF	MS	F	P
Gr	14.006	5	2.801	0.540	0.746
Gender	19.675	1	19.675	3.794	0.053
Gr X Gender	71.787	5	14.357	2.768	0.020
Error	798.681	154	5.186		

Variable: PO

Source	SS	DF	MS	F	P
Gr	17.052	5	3.410	1.718	0.134
Gender	4.861	1	4.861	2.448	0.120
Gr X Gender	3.985	5	0.797	0.402	0.847
Error	305.722	154	1.985		

Variable: PPAG (Prop score)

Source	SS	DF	MS	F	P
Gr	1578.089	5	315.618	2.074	0.072
Gender	300.946	1	300.946	1.977	0.162
Gr X Gender	730.154	5	146.031	0.959	0.445
Error	23441.102	154	152.215		

Table G1 (con't)
Variable: PVIC (Prop score)

Source	SS	DF	MS	F	P
Gr	1578.089	5	315.618	2.074	0.072
Gender	300.946	1	300.946	1.977	0.162
Gr X Gender	730.154	5	146.031	0.959	0.445
Error	23441.102	154	152.215		

Variable: PNC (Prop score)

Source	SS	DF	MS	F	P
Gr	1816.631	5	363.326	2.505	0.033
Gender	12.338	1	12.338	0.085	0.771
Gr X Gender	533.191	5	106.638	0.735	0.598
Error	22339.917	154	145.064		

Variable: PPO (Prop score)

Source	SS	DF	MS	F	P
Gr	1816.631	5	363.326	2.505	0.033
Gender	12.338	1	12.338	0.085	0.771
Gr X Gender	533.191	5	106.638	0.735	0.598
Error	22339.917	154	145.064		

Table G2

Means (and SD) of Major Variables by Gender: All Cases

	Gender		
Variable	Male (n=128)	Female (n=86)	Overall (n=214)
CDI	12.05	16.17	13.71
	(7.70)	(9.17)	(8.54)
I-E	10.14	11.02	10.50
	(3.35)	(3.35)	(3.37)
TOTP	37.40	35.31	36.56
(T-score)	(8.96)	(10.10)	(9.47)
R1	34.00	30.87	32.74
(T-score)	(11.78)	(10.78)	(11.17)
R2	45.76	44.01	45.06
(T-score)	(10.21)	(11.19)	(10.62)
R3	33.63	32.28	33.09
(T-score)	(8.51)	(10.31)	(9.28)
TOTP	304.15	294.00	300.07
(Raw scores)	(32.81)	(39.48)	(35.90)
RR1	109.40	105.10	107.67
(Raw scores)	(13.98)	(14.48)	(14.31)
RR2	98.59	95.20	97.22
(Raw scores)	(14.64)	(16.83)	(15.61)
RR3	96.16	93.67	95.16
(Raw scores)	(10.77)	(13.92)	(12.16)
PAG	5.24	5.53	5.36
	(2.00)	(1.90)	(1.96)
VIC	4.23	4.80	4.46
	(1.74)	(1.91)	(1.83)
NC	6.59	7.13	6.81
	(2.37)	(2.27)	(2.34)
PO	2.88	3.21	3.01
	(1.38)	(1.51)	(1.44)
PPAG	54.94	53.71	54.45
(Prop scores)	(12.17)	(12.38)	(12.24)
PVIC	45.06	46.29	45.55
(Prop scores)	(12.17)	(12.38)	(12.24)
PNC	70.17	69.32	69.83
(Prop scores)	(12.89)	(11.74)	(12.42)
PPO	29.83	30.68	30.17
(Prop scores)	(12.89)	(11.74)	(12.42)

Table G3

Means (and SD) of Major Variables by Gender: 116 Cases

	Gender		
Variable	Male (n=91)	Female (n=75)	Overall (n=116)
CDI	11.57	16.62	13.86
	(7.48)	(9.39)	(8.74)
IE	9.88	10.99	10.37
	(3.34)	(3.43)	(3.42)
TOTP	38.02	34.88	36.60
(T-scores)	(9.27)	(9.08)	(9.29)
R1	35.06	30.41	32.96
(T-score)	(11.96)	(10.27)	(11.43)
R2	46.48	43.76	45.25
(T-score)	(10.19)	(11.24)	(10.27)
R3	33.65	31.96	32.89
(T-score)	(9.19)	(9.50)	(9.34)
TOTP	306.45	292.88	300.32
(Raw scores)	(33.47)	(36.17)	(35.26)
RR1	110.59	104.59	107.88
(Raw scores)	(14.58)	(13.87)	(14.53)
RR2	99.80	94.92	97.60
(Raw scores)	(14.40)	(15.82)	(15.21)
RR3	96.05	93.35	94.83
(Raw scores)	(11.64)	(12.82)	(12.23)
PAG	5.18	5.51	5.32
	(1.98)	(1.92)	(1.95)
VIC	4.08	4.84	4.42
	(1.75)	(1.92)	(1.86)
NC	6.45	7.03	6.71
	(2.37)	(2.27)	(2.33)
PO	2.80	3.22	3.04
	(1.33)	(1.51)	(1.43)
PPAG	55.55	53.33	54.54
(Prop scores)	(12.70)	(12.32)	(12.54)
PVIC	44.45	46.67	45.46
(Prop scores)	(12.70)	(12.32)	(12.54)
PNC	70.38	68.23	69.41
(Prop scores)	(12.83)	(11.55)	(12.28)
PPO	29.62	31.77	30.59
(Prop scores)	(12.83)	(11.55)	(12.28)

Table G4

Means (and SD) of Major Variables by Diagnostic Group and Gender

Variable: CDI

Group: MDD	N	Mean	SD
Male	23	15.43	7.97
Female	38	20.29	9.31

Group: DYS	N	Mean	SD
Male	13	11.84	5.54
Female	17	13.35	7.23

Group: CD	N	Mean	SD
Male	26	9.54	8.30
Female	9	10.00	4.18

Group: OPP	N	Mean	SD
Male	13	9.31	5.87
Female	3	7.33	5.51

Group: ADD	N	Mean	SD
Male	9	11.67	7.45
Female	4	14.25	6.08

Group: VC	N	Mean	SD
Male	7	10.00	5.16
Female	4	20.00	15.79

Variable: IE

Group: MDD	N	Mean	SD
Male	23	8.70	3.47
Female	38	11.45	3.27

Group: DYS	N	Mean	SD
Male	13	11.23	3.09
Female	17	10.35	3.69

Group: CD	N	Mean	SD
Male	26	9.73	3.11
Female	9	10.56	2.83

Group: OPP	N	Mean	SD
Male	13	10.77	3.96
Female	3	7.67	4.93

Group: ADD	N	Mean	SD
Male	9	10.56	2.19
Female	4	11.25	2.22

Group: VC	N	Mean	SD
Male	7	9.29	3.73
Female	4	12.50	4.93

Table G4 (con't)

Variable: TOTP (T-score)

Group: MDD	N	Mean	SD
Male	23	35.13	6.82
Female	38	31.50	6.75

Group: DYS	N	Mean	SD
Male	13	33.62	5.28
Female	17	38.65	10.44

Group: CD	N	Mean	SD
Male	26	40.39	10.49
Female	9	40.11	10.49

Group: OPP	N	Mean	SD
Male	13	39.62	8.14
Female	3	39.00	13.00

Group: ADD	N	Mean	SD
Male	9	37.33	8.76
Female	4	33.25	6.75

Group: VC	N	Mean	SD
Male	7	44.86	14.55
Female	4	37.75	9.91

Variable: R1 (T-score)

Group: MDD	N	Mean	SD
Male	23	33.22	9.55
Female	38	28.26	9.37

Group: DYS	N	Mean	SD
Male	13	30.31	10.48
Female	17	34.65	11.12

Group: CD	N	Mean	SD
Male	26	35.81	13.94
Female	9	33.22	9.90

Group: OPP	N	Mean	SD
Male	13	35.77	11.67
Female	3	30.33	14.98

Group: ADD	N	Mean	SD
Male	9	37.78	8.91
Female	4	27.50	11.62

Group: VC	N	Mean	SD
Male	7	42.29	16.31
Female	4	29.50	10.67

Table G4 (con't)

Variable: R2 (T-score)

Group: MDD	N	Mean	SD
Male	23	42.96	10.36
Female	38	39.47	8.96

Group: DYS	N	Mean	SD
Male	13	41.85	5.98
Female	17	46.00	9.41

Group: CD	N	Mean	SD
Male	26	48.62	9.69
Female	9	52.44	10.62

Group: OPP	N	Mean	SD
Male	13	50.00	9.46
Female	3	47.33	11.68

Group: ADD	N	Mean	SD
Male	9	44.22	9.18
Female	4	45.75	6.65

Group: VC	N	Mean	SD
Male	7	55.14	13.15
Female	4	50.75	10.81

Variable: R3 (T-score)

Group: MDD	N	Mean	SD
Male	23	31.61	8.85
Female	38	29.13	7.55

Group: DYS	N	Mean	SD
Male	13	29.92	6.20
Female	17	36.24	11.13

Group: CD	N	Mean	SD
Male	26	36.62	9.71
Female	9	34.56	10.77

Group: OPP	N	Mean	SD
Male	13	34.46	6.05
Female	3	37.33	11.02

Group: ADD	N	Mean	SD
Male	9	30.11	7.13
Female	4	29.25	5.91

Group: VC	N	Mean	SD
Male	7	39.29	15.05
Female	4	33.50	13.10

Table G4 (con't)

Variable: RTOTP (Raw score)

Group: MDD	N	Mean	SD
Male	23	295.30	30.07
Female	38	279.71	32.31

Group: DYS	N	Mean	SD
Male	13	290.92	23.18
Female	17	307.65	36.48

Group: CD	N	Mean	SD
Male	26	314.65	34.33
Female	9	313.11	37.44

Group: OPP	N	Mean	SD
Male	13	313.31	29.13
Female	3	306.00	45.13

Group: ADD	N	Mean	SD
Male	9	305.56	33.33
Female	4	289.25	27.95

Group: VC	N	Mean	SD
Male	7	329.86	47.86
Female	4	303.50	37.68

Variable: RR1 (Raw score)

Group: MDD	N	Mean	SD
Male	23	108.52	12.40
Female	38	101.68	13.22

Group: DYS	N	Mean	SD
Male	13	104.85	13.14
Female	17	110.24	13.56

Group: CD	N	Mean	SD
Male	26	110.85	16.99
Female	9	108.67	13.15

Group: OPP	N	Mean	SD
Male	13	111.62	13.34
Female	3	104.00	18.33

Group: ADD	N	Mean	SD
Male	9	117.89	14.17
Female	4	100.50	16.90

Group: VC	N	Mean	SD
Male	7	115.86	15.77
Female	4	103.50	16.68

Table G4 (con't)

Variable: RR2 (Raw score)

Group: MDD		N	Mean	SD
	Male	23	93.70	15.51
	Female	38	88.24	14.80
Group: DYS		N	Mean	SD
	Male	13	95.31	8.39
	Female	17	98.71	14.15
Group: CD		N	Mean	SD
	Male	26	103.62	13.46
	Female	9	107.67	14.02
Group: OPP		N	Mean	SD
	Male	13	104.00	12.90
	Female	3	101.00	17.09
Group: ADD		N	Mean	SD
	Male	9	96.11	13.27
	Female	4	98.50	9.95
Group: VC		N	Mean	SD
	Male	7	111.00	17.59
	Female	4	105.50	15.78

Variable: RR3 (Raw score)

Group: MDD		N	Mean	SD
	Male	23	93.09	11.88
	Female	38	89.79	11.55
Group: DYS		N	Mean	SD
	Male	13	90.77	8.86
	Female	17	98.71	13.49
Group: CD		N	Mean	SD
	Male	26	100.19	11.04
	Female	9	96.56	13.58
Group: OPP		N	Mean	SD
	Male	13	97.69	7.87
	Female	3	101.00	12.29
Group: ADD		N	Mean	SD
	Male	9	91.56	11.19
	Female	4	90.25	8.46
Group: VC		N	Mean	SD
	Male	7	103.00	17.30
	Female	4	94.50	18.65

Table G4 (con't)

Variable: PAG

Group: MDD	N	Mean	SD
Male	23	4.78	2.17
Female	38	5.82	1.69

Group: DYS	N	Mean	SD
Male	13	5.85	1.68
Female	17	5.47	2.27

Group: CD	N	Mean	SD
Male	26	4.96	1.84
Female	9	5.22	1.72

Group: OPP	N	Mean	SD
Male	13	5.69	2.43
Female	3	4.67	3.51

Group: ADD	N	Mean	SD
Male	9	5.78	1.64
Female	4	5.00	1.16

Group: VC	N	Mean	SD
Male	7	4.29	1.60
Female	4	4.50	2.65

Variable: VIC

Group: MDD	N	Mean	SD
Male	23	3.30	1.58
Female	38	4.95	2.03

Group: DYS	N	Mean	SD
Male	13	4.85	1.57
Female	17	4.41	1.66

Group: CD	N	Mean	SD
Male	26	4.12	1.75
Female	9	4.56	1.59

Group: OPP	N	Mean	SD
Male	13	4.46	2.11
Female	3	2.67	1.53

Group: ADD	N	Mean	SD
Male	9	3.78	1.20
Female	4	6.00	1.41

Group: VC	N	Mean	SD
Male	7	4.71	1.89
Female	4	6.75	1.71

Table G4 (con't)

Variable: NC

Group: MDD

	N	Mean	SD
Male	23	5.22	2.22
Female	38	7.29	2.25

Group: DYS

	N	Mean	SD
Male	13	7.15	2.64
Female	17	6.47	2.13

Group: CD

	N	Mean	SD
Male	26	6.73	2.27
Female	9	7.11	2.21

Group: OPP

	N	Mean	SD
Male	13	7.00	2.45
Female	3	4.33	3.06

Group: ADD

	N	Mean	SD
Male	9	6.89	1.90
Female	4	7.50	1.00

Group: VC

	N	Mean	SD
Male	7	6.57	2.37
Female	4	8.25	2.75

Variable: PO

Group: MDD

	N	Mean	SD
Male	23	2.87	1.55
Female	38	3.47	1.45

Group: DYS

	N	Mean	SD
Male	13	3.54	0.66
Female	17	3.41	1.81

Group: CD

	N	Mean	SD
Male	26	2.35	1.20
Female	9	2.67	0.87

Group: OPP

	N	Mean	SD
Male	13	3.15	1.46
Female	3	3.00	1.73

Group: ADD

	N	Mean	SD
Male	9	2.67	1.23
Female	4	3.50	2.08

Group: VC

	N	Mean	SD
Male	7	2.43	1.40
Female	4	3.00	1.63

Table G4 (con't)

Variable: PPAG (Prop score)

Group: MDD	N	Mean	SD
Male	23	57.12	17.23
Female	38	54.89	11.43

Group: DYS	N	Mean	SD
Male	13	54.95	7.35
Female	17	54.41	13.02

Group: CD	N	Mean	SD
Male	26	54.57	10.70
Female	9	53.49	12.02

Group: OPP	N	Mean	SD
Male	13	56.09	15.97
Female	3	59.43	11.85

Group: ADD	N	Mean	SD
Male	9	60.46	7.74
Female	4	45.63	6.44

Group: VC	N	Mean	SD
Male	7	47.75	5.86
Female	4	36.64	13.56

Variable: PVIC (Prop score)

Group: MDD	N	Mean	SD
Male	23	42.88	17.23
Female	38	45.11	11.43

Group: DYS	N	Mean	SD
Male	13	45.05	7.35
Female	17	45.59	13.02

Group: CD	N	Mean	SD
Male	26	45.43	10.70
Female	9	46.51	12.02

Group: OPP	N	Mean	SD
Male	13	43.91	15.97
Female	3	40.57	11.85

Group: ADD	N	Mean	SD
Male	9	39.54	7.74
Female	4	54.37	6.44

Group: VC	N	Mean	SD
Male	7	52.25	5.86
Female	4	63.36	13.56

Table G4 (con't)

Variable: PNC (Prop score)

Group: MDD	N	Mean	SD
Male	23	66.49	15.66
Female	38	67.82	11.50

Group: DYS	N	Mean	SD
Male	13	64.78	11.46
Female	17	67.09	13.14

Group: CD	N	Mean	SD
Male	26	75.31	11.40
Female	9	72.40	8.39

Group: OPP	N	Mean	SD
Male	13	69.34	9.15
Female	3	56.40	6.86

Group: ADD	N	Mean	SD
Male	9	72.39	10.28
Female	4	70.00	14.52

Group: VC	N	Mean	SD
Male	7	74.59	14.06
Female	4	74.75	6.76

Variable: PPO (Prop score)

Group: MDD	N	Mean	SD
Male	23	33.51	15.66
Female	38	32.18	11.50

Group: DYS	N	Mean	SD
Male	13	35.22	11.46
Female	17	32.91	13.14

Group: CD	N	Mean	SD
Male	26	24.69	11.40
Female	9	27.60	8.39

Group: OPP	N	Mean	SD
Male	13	30.66	9.15
Female	3	43.60	6.86

Group: ADD	N	Mean	SD
Male	9	27.61	10.28
Female	4	30.00	14.52

Group: VC	N	Mean	SD
Male	7	25.41	14.06
Female	4	25.25	6.76